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*Some Psychological Factors Concerned In Spelling*



SOME PSYCHOLOGICAL FACTORS CONCERNED IN SPELLING

BY

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THESIS

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IN

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THE GRADUATE SCHOOL

June 2 1921

I HEREBY RECOMMEND THAT THE THESIS PREPARED UNDER MY  
SUPERVISION BY Florence Dorothea Jones  
ENTITLED Some Psychological Factors Concerned in Spelling  
BE ACCEPTED AS FULFILLING THIS PART OF THE REQUIREMENTS FOR  
THE DEGREE OF Master of Arts

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In Charge of Thesis

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Committee

on

Final Examination\*

\*Required for doctor's degree but not for master's

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## I

## Introduction

The importance of spelling has been recognized in schools of all times. After the invention of printing and the advance of reading to a position of prime importance among school subjects the spelling method was the means by which this reading was taught. Even in our grandfathers' time children were all instructed in the art of reading by the laborious method of learning ab, ac, ad, eb, ec, ed, ib, ic, id, and so on until they knew all combinations.

While now we have developed an entirely different method of teaching children to read, and psychological study has shown that children in learning this subject do not need to use the letters and letter names, yet for any adult interpretation of another's thoughts from the printed page and especially in the expression of thought in written form spelling is extremely important.

As a criterion of good education spelling has long been held in high esteem. We often hear some person spoken of as illiterate, or at least lacking in education because his written letter is full of mistakes in spelling. And though sometimes well educated people say that they are likely to misspell anything except their own names and we consider it merely an amusing statement, yet when these misspellings appear on paper they are not so lightly regarded.

While the unsatisfactory results of the teaching of spelling have for years received so much attention, yet far too little aid has





been given directly to the teacher who is responsible for the result, and the psychological study of the process is far from exhaustive.

Recently serious effort has been given to the study of the various phases of the spelling process and the results available are worthy of review.

### Time and Drill

Dr. Rice (43) in 1897 was interested in making a study of methods and results of spelling as actually taught. He visited many schools and gave a number of spelling tests. He found a variation in time spent of from six or ten to fifty minutes a day. As the accuracy increased gradually from grade to grade regardless of the time spent in study he concluded that "the compensation for time devoted to spelling is scarcely, if at all, appreciable."\* He was led to believe that maturity and the "personal equation" of the teacher should be considered leading factors.

Cornman (15), in his investigations, came to similar conclusions. Results of tests made before and after an extended period in which spelling drill was abandoned led him to believe that improvement in spelling is due to general mental development. He advocated the elimination of all drill and would have spelling taught only incidentally. He made a detailed classification of spelling errors referred to in Chapter VI.

Wallin (57) in 1910-11 tested the children of grades 4-8 in three Cleveland schools. He used both column and dictated composition tests and secured results that led him to oppose the conclusions of Rice and Cornman, and to believe that spelling efficiency is in

\* Rice, J. M. Scientific Management in Education. Hinds, Noble and Eldredge, New York, 1914. Chapters V and VI.





large measure dependent upon the method of teaching. He favored well organized drill.

### Transfer

Tidyman (56) studied the question of transfer of spelling ability from column to dictation exercises and found some, though not a large amount.

Mead (34) in an examination of English and sociology papers of students at De Pauw found "there was a very general tendency to lower the standard of efficiency in spelling used in sociology themes".\*

Winch (60) found that words correctly written in columns could be correctly written in dictation. He learned that easy words if not directly taught were as poorly spelled as more difficult words directly taught.

### Effect of Social Environment

Sears(45) worked with children in the Oakland, California schools, finding differences in efficiency of spelling which by investigation he was led to believe were due to social standing of the family. Amount of time spent, he said, would not determine results.

### Methods of Teaching

Pearson (40) tested two methods of teaching homonyms in grades 3-8 of the Horace Mann school. The results clearly favored the together method and in this oppose Burnham's (9) conclusions that the similarities of words prove a source of confusion. (See Burnham, Chapter V.) In a second study Pearson compared and tested class and individual study methods finding that class study produced

\*Mead, A. R. Transfer of Spelling Vocabulary, Journal of Educational Psychology. Vol. 8: 41-44, 1917.



better results.

Foster (19) believes that emphasis upon accurate speech would eliminate spelling errors due to faulty speech. But as the reliance upon sound may perchance increase spelling errors, his conclusions as to the percentage of elimination of total spelling errors is not clear. He classified spelling errors (referred to in Chapter VI.)

### Spelling Lists and Scales.

Jones (26), in a tabulation of all the running words in 75,000 themes written by 1,050 pupils of grades 4-8 found 4,532 different words.

Cook and O'Shea (14), tabulating 200,000 running words in the family correspondence of thirteen people found 5,200 different words.

Eldridge (18) studied the compositions of 17-18 year old boys for fifteen years. He found 900 most frequently misspelled words. This list was compared with the Jones vocabulary. It showed that 50% of the commonly misspelled words of boys 17-18 do not exist in the vocabulary of boys 8-14. He found that such a word as 'which' had disappeared from among the trouble making words, in which class Dr. Jones had placed it, and 170 words were now more frequently misspelled than either 'there' or 'their'.

Ayres (4), by experiments, selected a list of ten words for each grade such that on the average 70% of the words for any grade would be spelled correctly by pupils of that grade. Later he determined a list of the one thousand most common words. These were according to results of experimentation so divided and arranged into





twenty-six lists that all of the words of any given list are of approximately equal difficulty and that the difficulty of each list is greater than the list before. The steps between the lists are also approximately equal. The scale indicates the percentage of words in each list that pupils of the different grades should be able to spell correctly.

Starch (49) made a spelling test by selecting words at certain regular intervals of position in the dictionary, discarding all technical and obsolete words. He later made another test based on the 2,626 most common words of the lists of Eldridge, Ayres, Jones and Cook and O'Shea.

Buckingham (8), on the basis of experimentation prepared a list of words carefully scaled in difficulty. These have been added to the Ayres Scale. It is from Buckingham's Extension of the Ayres Spelling Scale that the words for the spelling test used in the present study were selected. (See appendix.)

#### Reliability of Tests and Scales.

Otis (39) has discussed the reliability of these scales. This question will not be included in this study as it concerns our problem but indirectly.

#### Psychological Analysis of Spelling

The ability to spell is often treated as though it were a simple thing, but it is in reality extremely complex. It is a sensori-motor habit desirably developed to such an extent that it reaches automatization in the adult. Burnham (9) emphasizes the psychology of the developing process and is here quoted at length:

"As Lay points out, the writing movement image of a word is composed of motor images of the separate syllables and letters. The movement images for the separate letters are learned



in the first writing instruction in orthography, but this is an extremely complicated process. Dozens of muscles must be coordinated with definite strength in a definite sequence and with definite accuracy and rapidity. This very complex process goes on unconsciously, of course. The process is similar to that in learning any other motor accomplishment."

Of learning to spell a given word he says:

"This memory of the word-to-be written is made up of auditory images of the different sounds composing the word, or the motor images of the speech movements involved in pronouncing the word, or of the visual images of the different letters, or of the motor images of the hand movements involved in writing the letters, or it may be made up of any two or all of these classes of image."\*

Mrs. Hollingworth (24) believed that in the experiments she carried out the fact was shown that the improvement by intensive training is greater than the results of tests could reveal, because of the difficulty of measuring such a complex process as spelling proves to be.

More and more study of the psychology of spelling needs to be done. Results and conclusions of tests now available are extremely varied and inconclusive.

Much discussion has arisen concerning which senses should be appealed to in teaching spelling. Bormann (5) as early as 1865 placed the greater emphasis upon the eye.

Kirkpatrick (28), Abbott (1), Lester (32), Shields (46), Smedley (47), Winch (60), Henmon (23), and Kline (29) urge the

\*Burnham, W. H. The Hygiene and Psychology of Spelling. Ped. Sem. 13: 474-99, 1906.





necessity of appeal to auditory presentation with younger children, but would have the teacher look constantly toward the development of visual imagery in recall which they believe to be most useful to adults.

Abbott (1) found that whatever method of presentation had been used the typical recall was by visual imagery of the letters.

Carmen (10) insists on appeal being made always to the eye. As a result of experimentation (see chapter V) she states that, "Directing of attention to the appearance of words in the whole field of early reading would fix the correct forms in the mind and establish the habit of noticing spelling so that later reading would provide the definite knowledge necessary."\*

Of the type of imagery used some investigations have indicated that auditory memory is of more importance than visual. Hawkins (22) says of an experiment he made that, "There is but one instance . . . where the visual-memory excels the auditory, and this was probably due to a lack of attention by a few pupils."\*\*

The distinction, however, must be kept in mind that visual presentation does not necessarily involve recall by visual imagery and auditory presentation does not necessarily involve recall by auditory imagery. Thorndike makes this distinction clear:

"The fact that a stimulus comes through one sense, say vision, does not imply that it will be remembered through an image of the same sense (here a visual image). The 'audile' or 'motile' may see words on the blackboard but have them call up non-visual images. What sense avenue is most effective for any individual does not depend on what kind of imagery he has, but upon the condition of his

\* Carmen, E. Kate, The Cause of Chronic Bad Spelling, Journal of Pedagogy, Vol. 13: 86-91, 1900-1901.

\*\* Hawkins, C. J., Experiments on Memory Types, Psychological Review, Vol. 4: 289-94, 1897.



sense organs and his habits of attention. Children who are notable visualizers may learn better from spoken than from written words."\*

Burnham (9) describes the work of Gregory (20) thus: "He experimented with two classes. The children were of an average age of eleven years in one class and thirteen in the other. . . . The result very briefly indicated very clearly this law, according to Mr. Gregory: 'That sound is the dominating element in children's spelling,' and he infers from this also that oral spelling should have a large place."\*\*

Wawrzyk (58) was one of the first to stress the benefit given by the muscle sense along with sight and hearing. He brought out the fact that the kinaesthetic sense of the hands and speech organs is very important in the "comprehension, retention and reproduction of words."\*\*\* He rejected oral spelling entirely.

Grupe (21) in her review of work done on spelling cites Meumann as saying that the best method of learning a given word is "to combine the sight of the new word with the analytical copying of it, plus at least the whispered pronunciation of its constituent elements."\*\*\*\*

The psychological studies referred to here are discussed more fully in Chapter V.

\* Thorndike, E. L., The Principles of Teaching, Seiler, New York, 1906.

\*\* Burnham, W. H., The Hygiene and Psychology of Spelling, Pedagogical Seminary, Vol. 13: 474-99, 1906.

\*\*\* Ibid

\*\*\*\* Grupe, Mary A., Review of Pedagogical Studies in the Teaching of Spelling, Education, Vol. 34: 11-19, 1913.





## II

### The Problem and Experiments

The mass of variable and inconclusive data and the importance of spelling as determined by the number of texts that appear one after another, the great amount of time and energy spent upon the subject in schools, and the stigma of illiteracy or at least lack of training and education which the public places upon those who are poor spellers led the writer to make some tests and carry on some experiments in the attempt to learn more concerning the factors involved in the complex process we call spelling.

Questions of, (1) the relative importance of the ear and eye, and aid through vocalization, (2) the correlation or lack of correlation between spelling ability and general intelligence, (3) the equality or inequality of words which by experimentation have been thought to be of approximately equal difficulty, (4) the relativity of the number of syllables and letters of a word to the mistakes in spelling it, (5) the types of error which children most frequently make, and, (6) the most frequent cause of poor spelling are some of the larger problems that have engaged our attention.

### The Experiments

The writer secured the cooperation of the Principal of Thornburn Departmental School in Urbana, Illinois, and gave all the



tests there. This school enrolls all children of grades seven and eight in this city. As grade seven contains 201 pupils, divided into sections according to teachers' estimates of intelligence this grade only was used in the experiments.

In October, 1920, the Illinois Intelligence Examination (See appendix) was given to these pupils under the direction of members of the Bureau of Educational Research of the University of Illinois. The scores of those children who also took the first spelling test were used by the writer.

To examine the spelling ability of these children the writer decided to use a test of words from Buckingham's Extension of the Ayres Spelling Scale. (The way in which this Scale was constructed is described in Chapter I). The remarks which are printed on the Scale sheet may be quoted in abridged form:

"All the words in each column are of approximately equal spelling difficulty. The steps in spelling difficulty from each column to the next are approximately equal steps. Numbers at the top indicate about what per cent of corrent spelling may be expected among the children of the different grades.

"Twenty words are enough to secure a reasonably reliable measure of the spelling ability of a class; but for such a measure of the ability of an individual 100 words will be required.

"In order that the words may be difficult enough really to measure spelling ability, they should be selected from columns for which the standard per cent of correct spellings is close to 50, - say between 50 and 66.

"The most appropriate measure of spelling ability is secured when the words are dictated in sentences at approximately the





standard rate of handwriting for the grade in question, no test word occurring at the end of a sentence. The placement of words on this scale, however, is on the basis of returns from column dictation. Children spell more accurately when they write words in columns than they do when they write them in sentences. If, therefore, words are dictated in sentences, as suggested, results may be expected to be somewhat lower than the scale indicates.

"The 505 words added to the Ayres Scale by Buckingham are printed in italics. They were not chosen, as Ayres' words were, according to frequency in use in written discourse, but rather according to agreements among spelling books. They are not, therefore, offered as constituting a fundamental vocabulary in the same sense as do the original 1,000 words selected by Ayres." \*

The foregoing explanations suggest that words be chosen from columns of such difficulty that the standard per cent of correct spellings for that grade is between 50 and 66. This would mean that our spelling test for grade seven should be composed of words from columns v, w and x. We, however, decided to use words from column T, in which these pupils should score approximately 79 per cent and column U, in which they should score about 73 per cent.

Twenty words are stated to be sufficient to secure a "reasonably reliable measure of the spelling ability of a class,"\* but as we wished this test to be as reliable as possible and also to furnish material for comparison of difficulty of various words and for types of errors all the words of column T, 74, and all the words of column U, 69, were used making a total of 143 words.

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\* Buckingham's Extension of the Ayres Spelling Scale  
(Copies may be had from the Bureau of Educational Research, University of Illinois, Urbana, Illinois)



The desire was to test these words by dictation sentences but the time necessary to write 143 sentences was believed to be impractically long. The writer, therefore, formulated 143 sentences in each of which one of these words was used, but never as the first or the last word of the sentence. (See sentences in appendix). In giving this test the sentence was first read by the experimenter and then the word to be spelled was pronounced. Thus, the experimenter gave the example,

He lost the pencil you bought.

Spell, ' pencil '.

(Directions given the children are found in the appendix).

On December 7, 1920 all the children present in grade seven, 181, took this spelling test. The results are given in Chapter III.

The third test of the series and the second one to be conducted by the writer was next given. It was desired to secure by means of this test some indications of the importance of sound in spelling. For this purpose the writer selected about one hundred words from the dictionary. These words were so unusual that they would be nonsense words to most people, and especially to children to whom the tests were given. The first ten of these words were used as a preliminary test by having an advanced class in educational psychology spell them. By a study of the results all doubtful words were eliminated and enough of the others to leave 50 words for the test. These were all such that no student in the advanced class had ever heard and were therefore quite sure to be totally unfamiliar to pupils in grade seven.

On January 15, 1921, this test was given to the 178 pupils present in grade seven. In the scoring of papers no word was marked incorrect which represented the correct sounds. For example, it had





been impossible to secure 50 words none of which contain sounds that might be represented by two or sometimes more letters. Thus, 'karling' and 'carling' were considered equally correct, as were 'hilsa' and 'hilsu'. The results are contained in Chapter III.

It was desirable that a fourth test should be given which would indicate the relative importance of vision to audition in spelling. On February 17 this test was given. The words used were the same nonsense words that had been spelled in the test for auditory presentation. It was believed that since nothing had been said to the pupils concerning the results of Test III, and as the pupils had not seen what words they had misspelled, that this interval was sufficient for them to forget what they might perchance have remembered of some of the words. In order to give visual presentation to the entire group of pupils at once a large chart standing six feet high was constructed. The 50 test words were written in heavy black letters four inches high on a roll of paper. A screen with oblong aperture at eye level covered the front of the chart.

By means of a crank the roll could be turned and the words in passing downward behind the screen would be exposed for a moment at the aperture in the screen.

As a preliminary test these words were shown to five girls in grade eight and the rapidity with which the word should move and the desired length of exposure determined.

On February 17, 1921, 176 children took this test. For results see Chapter III.

The latter part of March, 1921, the writer gave a series of individual tests to some of the pupils who had made very low spelling scores, or who had made a low score in one test and not in the others.



The first test was Whipple's whisper test for acuity of hearing. Several children were tested together. They were placed at equal distances from the experimenter and directed to hold their heads erect but to keep eyes down or closed. They recorded numbers whispered by the experimenter.

Memory span was tested by means of Starch's Memory Span Test.

Then vision was tested by having the children read different sizes of print on a chart.





## III

## Statement of Results

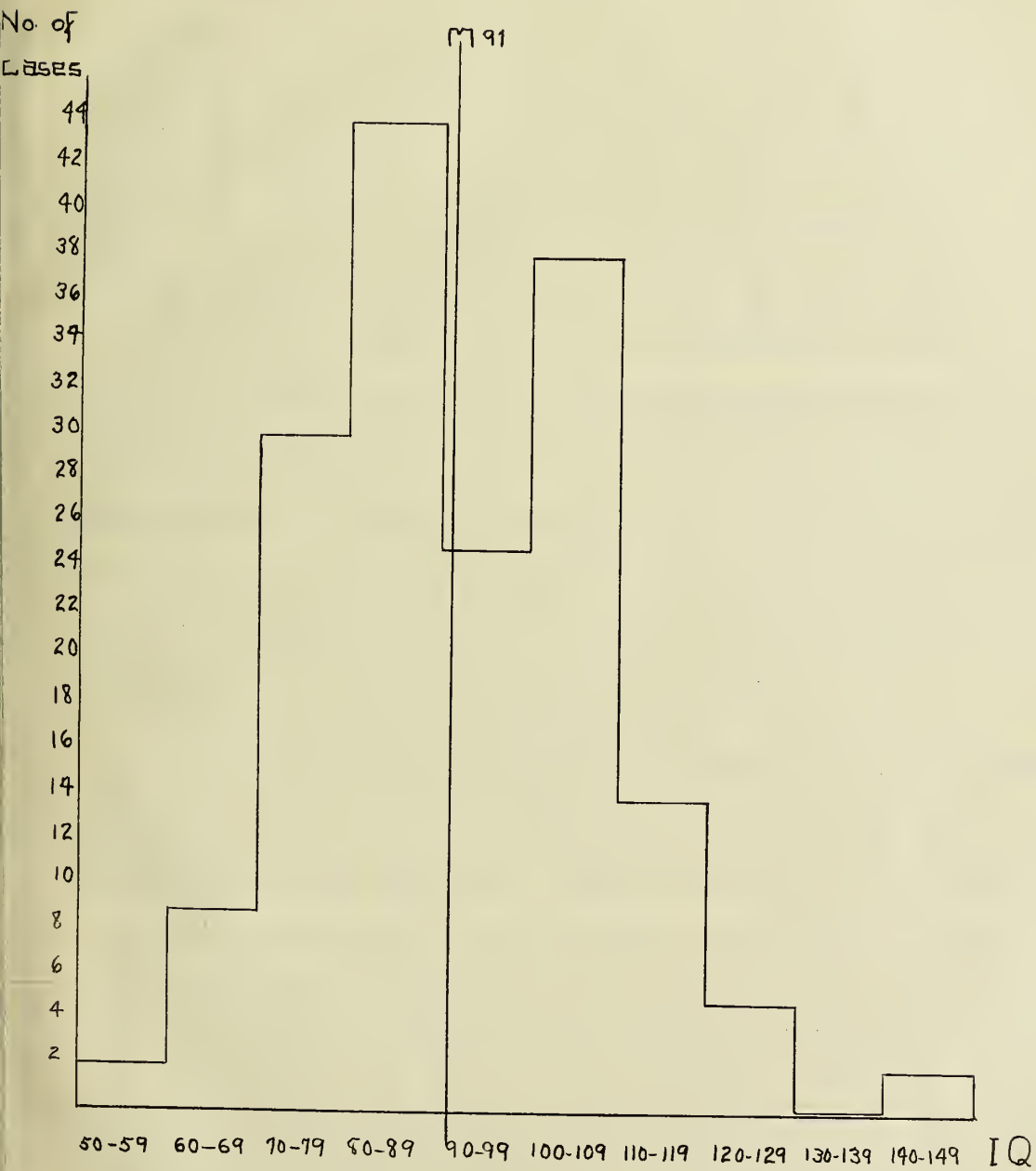
The scores of all children taking the Illinois General Intelligence Examination had been determined in terms of Mental Age and Intelligence Quotient. In this experiment only the Intelligence Quotient was used. Of those children who had taken this general intelligence test and also took the first spelling test the scores in terms of Intelligence Quotient ranged from 144 to 53, with the median score at 91. The relation of these scores to the scores in the first spelling test is given below. Chart I shows the distribution.

As described in Chapter II, the children were tested in spelling ability with words taken from Buckingham's Extension of the Ayres Spelling Scale. The scores on the 143 words spelled by 181 children ranged from 100% to 4.89% correct, or in terms of error from 0 to 136 with the median score at 68.5% or 45 errors. According to Ayres and Buckingham, pupils in grade seven should score approximately 79% in column T and 73% in column U. (See description of Scale in Chapter I) Since 143 words were spelled, the children may have become slightly fatigued and this may to a very slight degree account for the lower percentage. However, such a list of words would necessarily not be equally familiar to all pupils in all schools, and one school might, therefore, have a lower percentage and another a higher percentage than the standard score. The relation of the percentage of errors in the two columns is about what Ayres and Buckingham have thought normal. In column T there were 30.2% misspelled and in



## TEST I

## Illinois General Intelligence Examination





column U there were 38.2% (omissions not included) while the Spelling Scale indicates that the errors should be about 21% and 27% respectively. Reference to Chart II shows the distribution to be skewed toward the upper end.

In the next test the pupils spelled nonsense words which the experimenter pronounced. (See list in appendix.) (For description of method by which the test was made see Chapter II.) The scores of the results of this test ranged from 96% to 0% correct. The median score was 68%. Chart III shows the distribution. This is slightly more like the normal curve of distribution than the curve of Chart II. This may in part at least be explained by the fact that in spelling these nonsense words from hearing them pronounced a relatively untrained capacity was being tested, while in the previous spelling test many of the pupils were in some way familiar with most of the words, either by having heard them or by having seen them in their reading. Doubtless many of these very words had been studied by these pupils in spelling lessons at school.

Test IV was designed to enable the experimenter to test the ability of children to spell totally unfamiliar words by momentary visual perception of them. (See description in Chapter II and list of words in appendix) In this test the scores ranged from 90% to 0% correct with the median at 50%. This is much lower than the median of Tests II and III and the curve of distribution is less skewed. This is at least partly to be accounted for by the other factors than audition which aided in Test III and by the limitations of mechanism which hindered in Test IV. In Test III the pupils were allowed to watch the lip movements of the experimenter and this no doubt aided them. In Test IV the words had to be large enough for the entire group of pupils to see them without difficulty. This necessitated





## TEST II

Columns T & V of Buckingham's Extension of the  
Ayres Spelling Scale

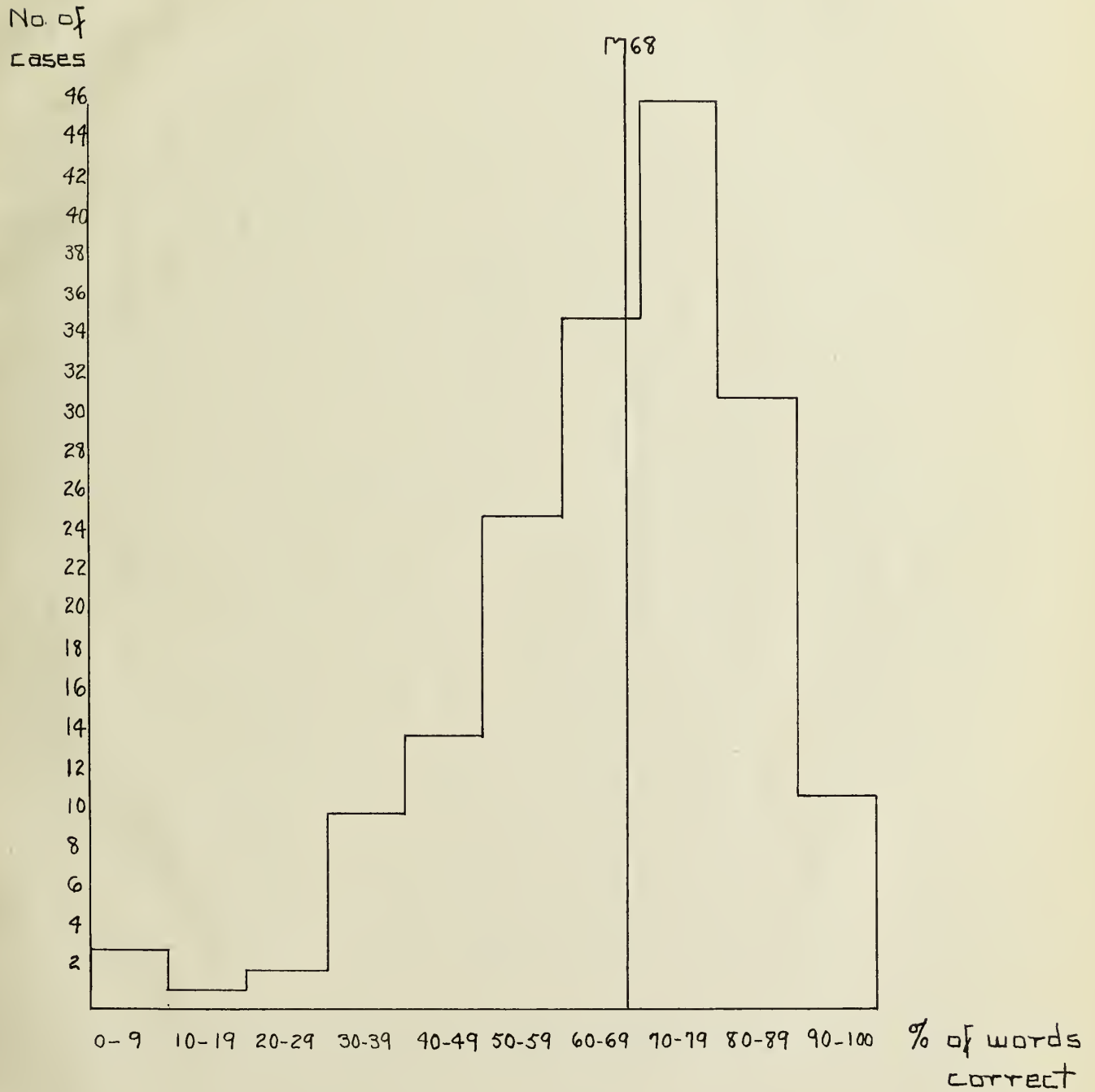




# CHART III TEST III

19.

## Spelling from Sound







# CHART IV TEST IV

20.

## Spelling from Short Visual Perception





the writing of the words on the scroll. If a tachistoscope had been used it would have enabled the experimenter to use the printed letters with which the pupils are familiar through their reading, but would have necessitated individual testing. Moreover, this spelling from momentary visual perception was a strange method to the children. They are used to spelling from hearing the words pronounced to them for that is the ordinary school-room practice in testing the perfection to which the spelling lesson has been learned, and pupils often write from dictation. But they were probably excited and rather nervous at attempting to spell from what they saw at a glance.

The complete records of the children are listed below  
(Chart V).



No. of pupil	IQ	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	No. of pupil	IQ	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>
1	112	100	92	80	55	100	79.7		50
2	126	97.2	82	56	56	100	79.0		
3	80	96.5	72	70	57	69	79.0	54	44
4	118	96.5	78	76	58	109	79.0	72	50
5	119	95.8	76	66	59	104	79.0	96	62
6	116	95.8	88	28	60	71	78.3	56	68
7	86	95.1	70	26	61	88	77.6	94	36
8	96	95.1	76	62	62	100	77.6	70	
9	112	94.4		68	63	82	77.6	60	48
10	109	94.4	90	60	64	92	77.6	76	72
11	104	93.7	84	64	65	92	76.9	70	78
12	104	93.7	88	66	66	86	76.9		
13	144	93.0	86	20	67	111	76.9	72	46
14	118	92.3	92	78	68	104	76.2	86	38
15	108	91.6	60	66	69		76.2	76	
16		91.6	86	74	70	117	76.2	78	60
17		90.9	72	42	71		76.2	76	30
18	88	90.9	74	74	72	79	76.2	78	54
19	96	90.9		58	73	80	74.1	70	44
20	115	90.9	82	90	74	88	73.4	84	68
21	113	90.9	68	60	75	104	72.7	68	50
22	104	90.2	70	50	76	104	72.7	58	38
23	100	90.2	84	64	77	116	72.0		46
24	88	89.5	76	66	78	85	72.0		58
25	104	89.5	90	62	79	84	72.0	76	54
26	104	88.8	76	62	80	100	72.0	74	
27	124	88.8		52	81	100	71.3	80	58
28	81	88.8		46	82	81	71.3	86	70
29	96	88.8	72	54	83	108	71.3	70	42
30	99	87.4			84	71	70.6	62	14
31		86.7	68	52	85		69.9	74	68
32	112	86.7	88	72	86	81	69.9	70	
33	80	86.0	62	74	87	88	69.2	64	
34	140	86.0	72	76	88	88	69.2	56	42
35	115	86.0	90	76	89	104	69.2	68	38
36	76	86.0			90	104	68.5	64	60
37	104	85.3	66	58	91	95	68.5	64	70
38	86	85.3	68	22	92	85	68.5	80	30
39	104	84.6	70	50	93	112	67.8	60	
40	116	84.6	82	58	94	86	67.8	64	56
41	92	83.9	62	68	95	85	67.8	46	50
42	89	83.2	74	58	96	100	67.8	80	70
43	96	82.5	82	54	97	91	67.8		
44	100	82.5	72	60	98	104	67.8	66	48
45	66	82.5	60	60	99		67.8	70	58
46	108	81.8	80	50	100	88	65.7	54	60
47	92	81.8	92	66	101	113	64.3	80	66
48		81.1			102	84	62.9	26	62
49	104	81.1	88	70	103	104	62.9	64	58
50	82	81.1	34	56	104	76	62.9	72	40
51	72	80.4	50	56	105	54	62.9		60
52	100	80.4	66	62	106	71	62.2		
53	126	79.7	84	64	107	87	61.5	70	66
54	92	79.7	94	40	108	91	60.1	84	





No. of pupil	IQ	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	No. of pupil	IQ	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>
109	89	59.4	74	56	163	60	32.8	42	18
110	75	58.7	82	34	164	53	31.4	8	38
111	83	58.7	84	42	165	73	30.7	52	30
112	108	58.7	68	32	166	79	29.3	50	18
113	84	58.7	58	78	167	82	27.9	58	10
114	84	58.7	52	26	168		27.2	62	50
115	109	58.7	74	60	169	109	26.5	62	32
116	89	58.0	70	2	170	82	25.8	72	4
117	104	58.0	48	42	171	65	25.1	26	22
118	126	58.0	50	56	172	77	24.4	54	24
119	79	57.3	78	64	173	96	24.4	52	16
120	92	57.3	56	48	174	71	23.0	42	44
121	93	57.3	84	42	175	67	20.2		
122	92	54.5	70	42	176	92	16.7	50	30
123	82	54.5			177	77	15.3	38	20
124	92	54.5	52	30	178	77	13.9	2	62
125	80	54.5	60	38	179	79	11.8	42	26
126	96	54.5	38	8	180	82	11.8	18	
127	93	53.1	36	46	181	79	4.8	0	32
128	109	53.1	58	68					
129	88	52.4	74	52					
130	104	51.7	64						
131	69	51.0	42	12	182			96	72
132	71	51.0	56	36	183			92	58
133	72	50.3	32	12	184			88	
134	80	49.6	46	32	185			86	70
135	120	48.9	82	26	186			86	56
136	96	48.9	52	32	187			82	
137	77	48.2	62	34	188			78	56
138	76	46.8	62	32	189			72	40
139	78	46.1	40	38	190			70	42
140	100	44.7	70	32	191			70	74
141	69	44.05	72	30	192			64	60
142	81	44.05	54	44	193			64	44
143	96	43.3	64	62	194			60	86
144	71	42.6	46		195			30	14
145	109	42.6	68		196			30	40
146	71	40.5	68	20					
147	79	40.5	86	60					
148	92	39.8	58						
149	85	39.1	42	36	197				56
150	66	38.4	46	34	198				50
151	72	38.4	34	28	199				14
152	84	38.4	48	22	200				8
153	76	37.7	64	32	201				2
154	77	37.7	62	76					
155	79	37.0	34	34					
156	88	37.0	48	8					
157	88	36.3	50	40					
158	96	35.5							
159	65	34.2	44	20					
160	82	34.2	30	46					
161	75	33.5	54						
162		33.5	54						

Took only T<sub>3</sub>, not T<sub>2</sub>Took only T<sub>4</sub>



## IV

## Relationships as Show by Tests

## Spelling Ability and Intelligence

For the purpose of studying the relations between the types of spelling tests and the relation of spelling ability as determined by these tests to general intelligence, coefficients of correlation between the results of the various tests were correlated.

Starch and others have reported high correlation between ability in the different school subjects. A few experimenters have attempted to determine the relation between general intelligence and ability in different school subjects.

Kline (29) in a study of normal school students found that "spelling abilities of the subjects agree remarkably with their school standing and general working efficiency."\*

Murray (38) did most of her study on the correlation of spelling ability with other school subjects, but found a positive correlation of .42 for spelling with general ability as determined by academic grades. Of her results she says:

"Such correlation as there is, however, is most evident in the upper and lower reaches of the scale: 50% of the best spellers

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\*Kline, L. W., A study in the Psychology of Spelling, Journal of Educational Psychology, vol. 3:381-400, 1912.





ranking also among the best students, whereas only 5% of the worst spellers fall in this class.... On the whole, however, it will be found most satisfactory to accept general learning ability as the basic factor in correct spelling, explaining the anomalies by reference to peculiarities of early training, of the individuals sensory or motor equipment, or interests."\*

Sears (45) shows the relation between general ability to do all kinds of school work, by which he means general intelligence, and ability to spell. Of this definition of general ability he recognizes the limitations: "While such a definition of the term 'general ability' would be of no use in psychology it does serve a purpose in organizing time schedules, curricula, lesson assignments, etc."\*\* His study was made in the Oakland, California schools and while undertaken in the interests of method and use in teaching rather than in the psychology of the subject, yet his conclusions are worthy of notice. He found accelerated pupils average higher, retarded pupils are when groups are considered, always lowest and the differences are marked.

Houser (25) made a study of unselected children in the Alameda, California schools with the purpose of determining the relation between teachers' estimate of general intelligence and ability to spell, as measured by meaning vocabularies in terms of defining ability. He had found a high correlation between teachers' estimates

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\*Murray, Elsie, The Spelling Ability of College Students, Journal of Educational Psychology, vol. 10:357-76, 1919

\*\*Sears, J. B., Spelling Efficiency in the Oakland Schools, School and Society, vol. 2:531-7, 1915.



of intelligence and the scores with the Binet-Simon tests in these schools. According to the Pearson method of determining coefficient of correlation the relations were as follows:

Grades	Correlation
5B	+.596
6B	+.346

The average coefficient of correlation for grades 4B to 8B inclusive was:

Spelling and general intelligence	+.530
Spelling and meaning	+.624
Meaning and intelligence	+.393

His conclusions may well be quoted:

"The correlation.... would seem to be high enough to deserve being called significant. That, however, these relationships within each grade and in the average should indicate in all but one instance a considerably higher correlation between spelling ability and intelligence than between meaning vocabularies (or defining ability) and intelligence is little short of surprising."\*

Hollingworth (24), in her study of children with special disability in spelling found the correlation between spelling ability and general intelligence. She used the Stanford Revision of the Binet-Simon Scale for testing mental age and intelligence quotient, and the Ayres Measuring Scale for determining the degree of spelling ability. By the Pearson method she found the correlations to be

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\*Houser, J. D., Spelling Ability and General Intelligence, Elementary School Journal, vol. 16: 190-99, 1915.





very small.

	M.A. & Sp.	I.Q. & Sp.
First Semester Group	+.237	+.313
Second Semester Group	+.081	+.169
Control Group	+.419	+.470
Mixed Group	+.120	+.342

Of these results she says:

"The inference must therefore be that in the case which we have here under consideration inability to spell is not very closely connected with general mental capacity.

"As to how far this lack of correlation between General Intelligence and Spelling Ability would hold for groups of children selected at random our data do not inform us. It is true that in the case of our Control Group composed of children not selected for special disability in spelling (but for arithmetic), the correlation between Spelling Ability and General Intelligence is appreciably higher than in the groups composed of poor spellers, and this evidence, though not sufficiently extensive to be regarded as a basis for generalization, suggests that among children chosen at random... the correlation between General Intelligence and Spelling Ability might be greatly increased."\*

Since, however, the study by Houser was made with teachers' estimates as a measure of intelligence, and the one by Hollingworth dealt particularly with children of special disability either in spelling or arithmetic, and as there has been found a significant if

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\*Hollingworth, Leta S., The Psychology of Special Disability in Spelling, Teachers College, Columbia University, Contributions to Education, no. 88, 1918





not high correlation between ability in the various school subjects the results could not in these cases be considered representative of children of unselected groups.

Working with all the children of the seventh grade of one city, the writer sought to arrive at rather definite conclusions concerning the relation of spelling ability to general intelligence. Two hundred and one children were enrolled in grade seven.

The mental tests which form the Illinois General Intelligence Examination (See appendix) had been given these children by members of the Bureau of Educational Research of the University of Illinois in October, 1920. The Intelligence Quotient of children taking this test was the measurement of intelligence used. The scores from Test II given December 7, 1920 (See appendix) were used as the measure of ability in spelling. In making the comparison, the scores of all children who took both the Illinois General Intelligence Examination and the spelling test were used. This was 171. The correlation was made by the Pearson method.

A positive correlation of .53 was found between intelligence quotient and spelling ability. This correlation is significant. While it is not so close a correlation that we can say a child of high general intelligence will be of high ability in spelling, still it is close enough to imply that most children of high general intelligence are not likely to be very poor in spelling, and that a child of very poor spelling ability will not usually be found among the highest in general intelligence. Such cases as Mrs. Hollingworth (24) studied (special disability in spelling) then seem to be infre-





quently found. In fact among the two hundred and one pupils of grade seven studied, the writer attempted to find a few who were poor in spelling only, and failed. Individual conferences with pupils and a study of teachers' marks showed only one pupil failing in spelling and not in any other subject. This girl, A.B., explained to us that she has serious difficulty in either oral or silent reading but from knowledge gained in class recitation work was able to pass the examinations on content. Her reading mark then did not indicate her disability in that subject while her spelling mark did. (See individual studies in Chapter VII).

Certain children who made a very low score in the spelling test were found to have as high as 89 as a semester mark in spelling. They attempted to explain this by saying that they could memorize the lists of words necessary to pass the examinations but were unable to remember correct spelling for a very long time or to spell words they had heard and had themselves used orally but had not studied just previous to the spelling test. A search among the scores of the 20 poorest spellers for some having a high I.Q. revealed but one above 96. This one had an I.Q. of 109. The correlation of the spelling scores to the I.Q.'s was then found, using the 10 best and the 10 poorest spellers. By the Spearman rank method this was found to be  $+ .708$ . This is much higher than the correlation for the entire group and indicates that the correlations are closer in the upper and lower ends of the curve of distribution. This is the reverse of conditions found by Hollingworth (24). But in selecting the children who were poor in spelling she also made it a condition that they should not





be pupils who were poor in other subjects. This, then, limited her number of poor spellers and prevented the correlations from being representative of the class called 'poor spellers.' Our findings agree with the general statement that Murray (38) makes: "Such correlation as there is, however, is most evident in the upper and lower reaches of the scale."\*

#### Other Correlations

The spelling test (Test II) and spelling from auditory presentation (Test III) were found by the Pearson method to have a positive correlation of  $+ .71$ . When the 10 highest and 10 lowest scores were used they were found by the Spearman rank method to have a correlation of  $+ .84$ .

The correlation between the spelling test, (Test II) and spelling from visual presentation (Test IV) was  $+ .42$ . This is much lower and indicates that the factors employed were not those most frequently used in spelling. The fact that the words exposed were in large script rather than the usual print undoubtedly increased the difficulty.

Tests III and IV had a correlation of  $+ .46$ .

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\*Murray, Elsie A., The Spelling Ability of College Students, Journal of Educational Psychology, vol. 10-357-76, 1919.



## V

## Auditory and Visual Presentation of Material

This phase of the psychology of the spelling process has probably received more study than any other. It is highly important for it determines much concerning the pedagogical methods to be employed. If visual presentation produces the best results it should be carefully studied and used to most advantage. And so with auditory presentation if it prove the more effective. There have been ardent advocates of both types.

Lay (31) has done much research on this question. Burnham (9) says of his findings that his "problem was to determine the value of orthographic exercises and wherever possible to determine the share which perceptions of hearing, sight, speech movement, and writing movement have in spelling." \* In an experiment on 3,000 individuals he concluded that "the results were sufficient to demonstrate that the motor presentations which occur by the activity of the vocal organs and the hands have a predominant share in orthography, and that the ear has far less influence than the eye." \*

Carmen (10) made three experiments upon adults. The tests were for observation progressively decreasing in likeness to words. She says, "We see a decrease of the difference in observational ability...as the data to be observed become more and more unlike words.

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\* Burnham, W.H., The Hygiene and Psychology of Spelling, Pedagogical Seminary, vol. 13: 474-99, 1906





Ability to spell well, therefore, implies not a general habit or power of observation, but a special ability to notice small differences in words." \*\* Of the manner she thinks best for teaching she suggests that, "Directing the attention to the appearance of words in the whole field of early reading would fix the correct forms in the mind and establish the habit of noticing spelling so that later reading would provide the definite knowledge necessary." \*\*

According to Bormann (5) "There is no simpler or more secure method than that of accurate copying; for every man retains better the impressions received by the eye than those received by the ear. Just as one who hears only correct speech learns to speak correctly, so one who sees always only correct writing learns by this means to write correctly..... The task of orthography is to help the children to imprint the physiognomy of the words upon the mind, a process which naturally occurs predominantly by means of the eye." \*\*\*

Grupe (21) cites Meumann (21) as advocating that the best method is "to combine the sight of the new word with the analytical copying of it, plus at least the whispered pronunciation of its constituent elements." \*\*\*\* While he thus emphasizes motor elements, yet he states "that visual presentation is far easier for learning, both for children and adults, and that this rule holds for all material though more especially for nonsense-syllables." \*\*\*\*

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\*\* Carmen, E.Kate, The Cause of Chronic Bad Spelling, Journal of Pedagogy, vol. 13:86-91

\*\*\* Burnham, W.H., The Hygiene and Psychology of Spelling, Pedagogical Seminary, vol. 13:474-99, 1906

\*\*\*\* Grupe, Mary A., Review of Pedagogical Studies in the Teaching of Spelling, Education vol. 34: 1-19, 1913





Abbott (1) cites memory studies and her conclusion is similar concerning nonsense-syllables. "The general result of their studies has been that either the visual or the auditory presentation may be the better, depending, first upon the age of the person, and second, upon whether the material is meaningless, or meaningful. For meaningless material, nonsense syllables, visual presentation is the better irrespective of age." \*

"It is obvious that in the recall the writing of a word may follow, (a) the auditory imagery of the letters, or (b) the visual imagery of the letters, or (c) the incipient vocalization of the letters. It is also obvious that the word may be learned through auditory or through visual perception, and that in either case the learning may be aided by accompanying vocalization, and perhaps also by simultaneously writing it." \*

Wawrzyk (58) went to the extreme of maintaining that "along with sight and hearing the muscle sense of the hands and of the speech organs should be considered, since these play an important role in the comprehension, retention and reproduction of words." \*\* He would have all oral spelling eliminated.

#### Dependence on Age

That appeal to audition or vision should depend in great part upon the age of the subject has been advocated by many. Some have emphasized the need for more attention to hearing in young children, while others believe that since vision seems to aid more in adult spelling, this appeal should be utilized as much as possible

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\* Abbott, Edwina E., Memory Consciousness in Orthography, Psychological Review Monograph Supplement XI

\*\* Burnham, W.H., The Hygiene and Psychology of Spelling, Pedagogical Seminary, vol.13:474-99, 1906



with children, looking toward the form they will find most useful in later years.

Diesterweg (17) is quoted by Burnham (9): "While the spelling of words in a foreign tongue may be learned by the eye alone, in the living mother-tongue the chief tool is the ear, that the different branches of instruction in language, hearing, speaking, reading, and writing are interrelated and form a connected whole. No part should be isolated, and in all the aim should be a perfect understanding of the speech. While in spelling the chief emphasis should be placed on the ear in the lower grades, nevertheless in the later grades the eye should take the lead." \*

Lester (32) gives a similar view quoting Lay and Pohlman as authorities, saying they "have made it probable that during the earlier years spelling should be taught by combined appeal to motor memory (articulatory and graphic), together with visual and auditory; and that the visual memory improves as the child approaches maturity, and finally becomes the chief resource of the adult." \*\*

Kirkpatrick (28) found by some experiments, that written names were remembered better than spoken names. He attributes the superiority of younger children in memory of spoken words over written to the fact that "they have not had so much practice in dealing with visual as with spoken words." \*\*\*

Shields (46) discusses this question at length: "The child of six entering school has a large spoken vocabulary (no written language) so it follows that we should proceed to build up

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\* Burnham, W.H., The Hygiene and Psychology of Spelling, Pedagogical Seminary, vol. 13:474-99, 1906

\*\* Lester, J.A., Teaching Freshmen to Spell, English Journal, vol. 5:404-410

\*\*\* Kirkpatrick, E.A., An Experimental Study of Memory, Psychological Review, vol. 1: 602-9, 1894





visual word memories from the oral vocabulary developing relationships between oral and written words, translating the one into the other. Also, teach the meaning of the written word from its relationship to the thing signified." \*

According to permanency of results he says, "The teacher who takes this view of the matter will be likely to lay chief emphasis on the visual method of teaching spelling, and to use the oral method, if at all, in a secondary capacity.

"In so far as the oral method may aid in pronunciation and syllabification it is valuable, but these are secondary considerations in view of the main end to be attained in teaching spelling, which is correct writing, a process which depends mainly upon the clearness of the visual word image and associated muscle memories."\*\*

From experimentation Winch (60) says: "I suggest that the degree of mental development is roughly the determining factor, modified somewhat by prevailing school methods.....

"We must in education look forward rather than backward, and as soon as there is a reasonable probability that children will succeed as well by silent (visual) individual methods they should be adopted." \*\*\*

Concerning the method of presentation and manner of recall Burnham (9) is particularly interesting: "The memory of the word-to-be written is made up of auditory images of the different sounds composing the words, or the motor images of the hand movements involved

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\* Shields, T. C., Teaching the Child to Spell, Catholic Educational Review, vol. 2: 841-53

\*\* Ibid

\*\*\*Winch, W. H., Further Experimental Researches on Learning to Spell, Journal of Educational Psychology, vol. 5: 449-60, 1914



in writing the letters, or it may be made up of any two or all of these classes of images.

"The modality of the images in any concrete case is determined by two things. First, by the general tendency of the individual's mind, some being ear-minded or having a special tendency to think in auditory images; others being eye-minded or having a special tendency to think in visual images, and still others motor-minded or having a special preference for motor images, or finally, others of a mixed type. Second, the modality of the images is determined by the method by which one learned to spell the given word, being auditory perhaps if one learned by dictation, or visual if one learned by reading, or speech motor if one learned by oral reading, or hand motor if one learned by copying.

"It was found that the different memories cannot be tested as isolated memories. In testing the visual memory, for example, it was noted that many children, in spite of admonitions to the contrary, moved their lips and throat. In the auditory tests, too, short lip movements were noted in some pupils." \*

Concerning the manner of receiving stimuli and the expressive mechanism Kline (29) found in experiments that, "Interference with preferred form of expression proved a handicap in the first series, but became a negligible quantity toward the end of the second; on the contrary interference with the dominant receptive mechanism persisted fairly uniformly throughout both series."\*\*

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\* Burnham, W. H., The Hygiene and Psychology of Spelling, Pedagogical Seminary, vol. 13:474-99, 1906

\*\* Kline, L.W., A Study in the Psychology of Spelling, Journal of Educational Psychology, vol. 3:381-400, 1912





## Appeal to Many Senses .

Smedley (47) believed that most good spellers are of the visual type and gave tests "to determine how the power of auditory memory compares with visual memory when actually employed in learning to spell." \* He pointed out that while he believed auditory memory is stronger with children yet, "audio-visual is always stronger and audio-visual-articulatory best." \*

Williams (59) also believes in appeal to many senses:

"Because of intimate and close connection existing between the different areas of the brain, it is clear that knowledge gained through many senses is more permanent than if acquired through only one or two channels. Since ability to spell correctly depends upon the acquisition of correct imagery this must be gained in the first place by the focalization of attention upon the word by means of the senses --visual, auditory, vocal and motor." \*\*

Henmon (23) discusses this question but does not agree with others in the need for appeal to many types of imagery:

"It is generally claimed that with younger children auditory presentation gives the better results, except for meaningless material, while in older children and adults visual presentation is better than the auditory." \*\*\*

But, "too great an increase in the number of possible cues may be distracting and reduce the force of associations. This might

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\* Smedley, F.W., Spelling, U. S. Commissioner of Education Report, vol. 1:1137-8, 1902

\*\* Williams, H.S., The Teaching of Spelling, Journal of Education, vol. 80:665-66, 1914

\*\*\* Henmon, V.A.C., The Relation Between the Mode of Presentation and Retention. Psychological Review, Vol. 19: 79-96, 1912





be expected where the natural appeal is to one sense, as in colors or tones.....The results of experimental investigation are inconclusive\*.

He states that auditory presentation is "superior to visual in immediate memory of adults, a result attributable to the greater ease and freedom of visualization with auditory presentation and the greater effort of attention required." \*

This relation of auditory and visual presentation to the spelling process was studied by the writer in the series of tests given to grade seven. (See Chapter II) In Test III the children were to spell entirely unknown words by hearing the experimenter pronounce them. (See Appendix) A month later, when they had forgotten the words pronounced, they were given Test IV. The words of this test were the same as those of Test III (See Appendix) but were now given visual rather than auditory presentation. The tachistoscopic method used was described in Chapter II.

The scores in the auditory presentation were higher than those in visual presentation, the median of the former being 68 and of the latter 50 (See charts in Chapter III).

The decisions of some of the experimenters on visual and auditory presentation of spelling words, have been quoted above. In our tests auditory presentation was superior. Whether most of the previously mentioned writers would class the children of grade seven as young children or with those nearing adult conditions is a question. Their ages range from 10 to 16.

The writer is convinced that because of the visual aid secured from watching the lip movements of the experimenter in Test III and the familiarity of pupils with spelling words from pronunciation by the teacher, and the unfamiliarity with a test of the type

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\*Henmon, V.A.C., The Relation Between the Mode of Presentation and Retention. Psychological Review, Vol. 19: 79-96, 1912



of Test IV together with the limitation caused by the necessity of using script instead of print, and large rather than the small letters with which pupils are familiar. The fact that stood out was the close relation of spelling ability to the ability to hear and see well. This was brought out in Chapter II which discusses correlations. No tests were made to determine the importance of auditory and visual imagery in spelling, but the tests for auditory and visual presentation show the importance of impressions through these two sense avenues in learning to spell.

In the automatization of spelling we do not realize the parts that audition, vision, and articulatory and graphic sensations play, for the elements do not stand out, yet they are present and are closely interwoven with each other.

### Internal Speech

When the children were taking the test for auditory presentation of unfamiliar words they watched the movements of the experimenter's lips and were usually seen to form the word with their own lips and mouth. In many cases where there was no visible movement there were undoubtedly slight and probably only half formed movements of the speech organs.

Such concomitant inner speech has been found to be almost invariably present during silent reading and much of it would be found by similar testing of the spelling process.





## VI

## Study of Errors

Several investigators have studied spelling errors and classified them. The words classified and the methods of classification have differed.

Cornman (15) studied the misspellings of children writing all the words possible in fifteen minutes. He developed a careful classification: (1) those due to motor incoordination, including omission, addition, change, confusion of m and n, transposition, wrong letter doubled, sensori-motor attraction and ideo-motor attraction, (2) sensory incoordination including phonetic, standard (dependent on standard pronunciation), local (faulty pronunciation), confusing (ei, ie, doubling of single letters, non doubling) and (3) complication arising from a combination of motor and sensory errors.

Foster (19) classified 2005 spelling errors of college students as:

Carelessness	467
Mispronunciation	259
Insertion of silent letters	388
Omission	465
Order of ie and ei	31
Confusion of al and le	33
Confusion of ent and ant	24
Confusion of se, ce, ze	44



Confusion of able, ible, ance, ence	28
Spelling er as pronounced	167
Due to all other causes	<u>99</u>
	2005

Hollingworth (24) includes a chapter on determinants of error. These are studied from a psychological point of view according to the causes of misspellings, as lapses, idiosyncrasy, syllabication, and knowledge of meaning.

In the course of checking all the misspelled words in the papers from the Ayres-Buckingham Spelling Test, Test II, certain sorts of errors seemed to be more frequent than others; certain words seemed to be misspelled a greater number of times than others; and some words were misspelled many times in but few ways and vice versa. We have here attempted to reach some conclusions concerning errors in spelling.

The words used were 74 words of Column T of Buckingham's Extension of the Ayres Spelling Scale and 69 of Column U, making a total of 143 words. There were 181 children who took this test and, therefore, a total of 25,883 spellings. Of these 438 words were omitted or unfinished and 8,711 misspelled, making a total of 9,149 errors or 35.3%. For the sake of clearness this is given below:

#### Chart VI

Total spelling words	Omitted	Misspelled	T. errors	% of errors
25,883	438	8,711	9,149	35.3

#### Comparison of Columns

A tabulation of the total misspellings in the two columns reveals the greater difficulty of Column U:





## Chart VII

	Spellings	Misspellings	% misspellings
Column T	13,394	4036	30.1
Column U	12,489	4675	37.4

Omissions are not included here. These results conform to the experimental results of those who formulated the Scale in that Column U shows greater difficulty as a whole than Column T.

But as all words within a column were not misspelled an equal number of ways or an equal number of times a tabulation was made to reveal the variations present. In column T the number of ways misspelled varies from 4 to 57. 'Guess' was misspelled in but 4 different ways while 'associate' was misspelled in 57 different ways. In total number of times the range was from 8 for 'folks' to 121 for 'burglar'. This shows that words determined by experimentation to be approximately equally difficult vary greatly in difficulty for a totally different group of pupils even though both groups are of unselected children. In Column U the variation in number of ways misspelled is from 1 for 'meant' to 64 for 'almanac' and in number of times from 19 for 'citizen' to 133 for 'siege'. From this it is seen that the word misspelled the greatest number of ways may not be misspelled the greatest total number of times. Chart VIII below shows this.

## Chart VIII

Column T			Column U	
Ways misspelled				
Least	4	'guess'	1	'meant'
Greatest	57	'associate'	64	'almanac'





## Chart VIII Continued

Column T			Column U	
Times misspelled				
Least	8	'folks'	19	'citizen'
Greatest	121	'burglar'	133	'siege'

Charts IX and X show the variation between words of the same column both in number of ways misspelled and in total number of times misspelled. If the words were of equal difficulty they would form a straight horizontal line instead of the uneven line of Charts IX and X.

Chart X reveals the fact that words in the lower part of Column U tended as a whole, to be misspelled a greater number of times than those in the upper or first part of the column.

This variation is of great importance in teaching. Such a word as 'guess' (See Chart VIII) has been misspelled in but 4 ways. Of these 4 ways 5 persons misspelled it 'gess' and 4 misspelled it 'guest', thus comprising 9 of the total 13 times or 69% of the number of times misspelled and 50% of the number of ways. This word would, then, present but few types of difficulty to pupils in school. In contrast, the word 'associate' which is misspelled in 57 different ways and a total of 85 times would present many varied difficulties. The greatest number of times it is misspelled in any one way is 8 in the form 'accosiate', and second greatest is 7 in the form, 'asociate'. This constitutes only 15 times or 17% of the total 85 misspellings. In the case of a word like this the teacher must watch for and correct, or prevent many types of errors. (See 'associate' in lists in appendix.) Chart XI and XII show % of total errors contained in 2 greatest ways misspelled.



misspelled

LUUUPIN

Chart IX

No. of words

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74

No. of times misspelled

128

120

112

104

96

88

80

72

64

56

48

40

32

24

16

8

44.

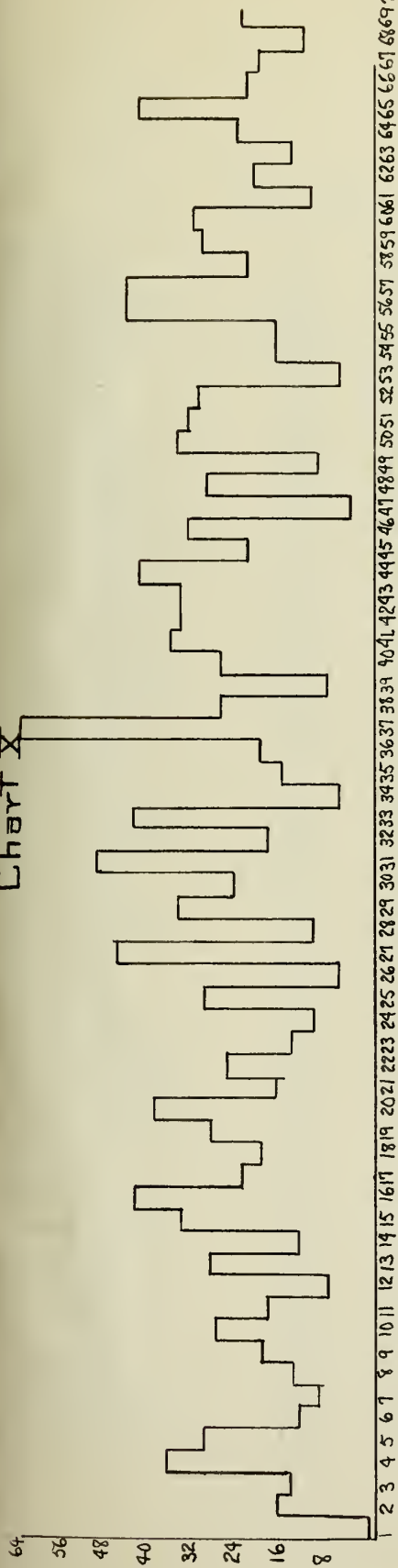
No. of words

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74





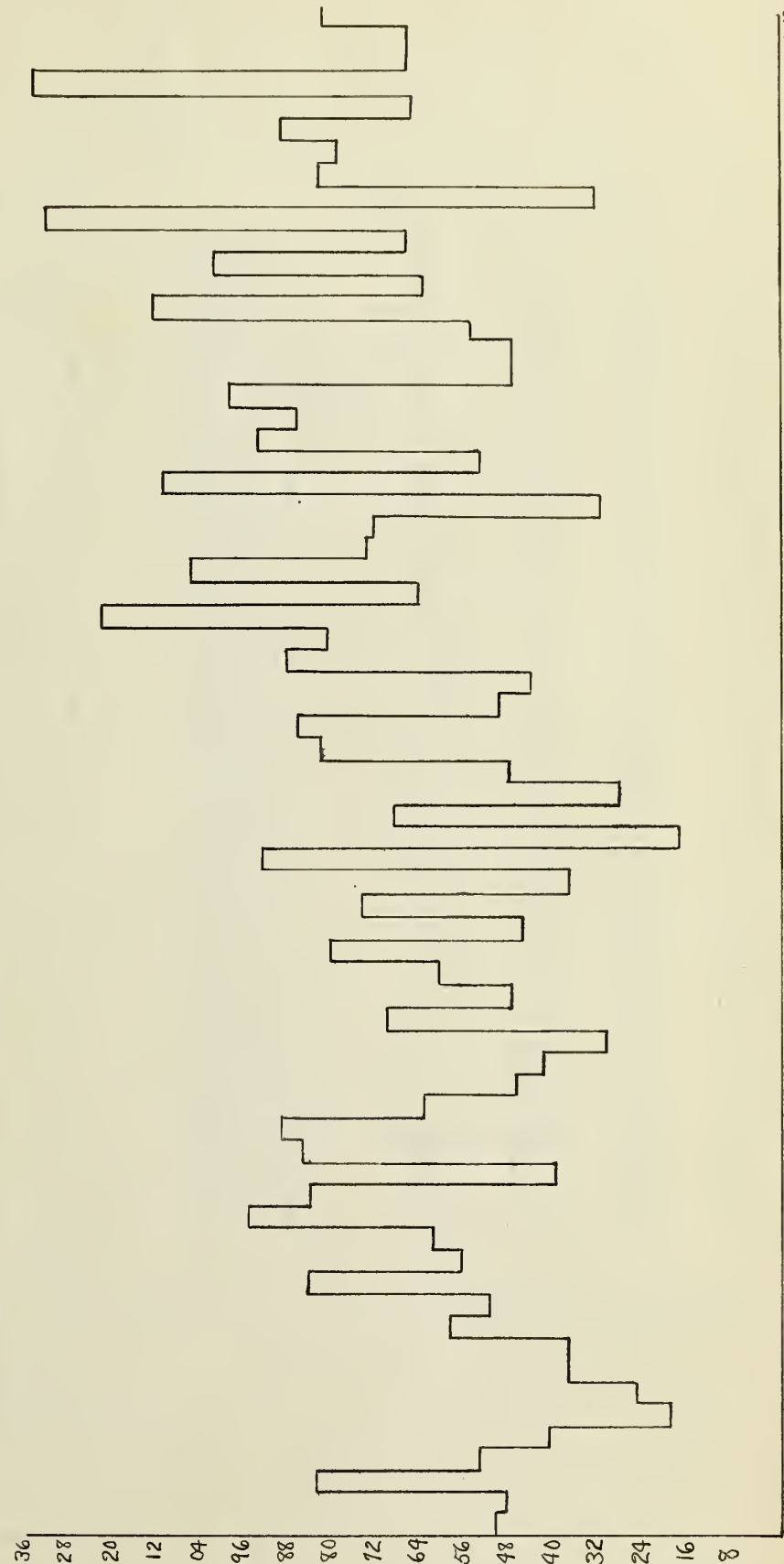
Chart X



No of words

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74

No of times misspelled



No of words







## Chart XII

Column U

69 words

	Ways	Times	Gr 1 Way	2d Gr		Ways	Times	Gr 1 Way	2d Gr
meant	1	51	1	0	ancient	27	50	9	6
earliest	17	49	17	10	apiece	8	45	16	15
whether	15	83	51	16	approaches	27	97	57	8
distinguish	37	53	6	6	attorney	36	89	13	12
consideration	30	42	5	4	bouquet	34	123	71	9
colonies	13	20	5	4	calculation	34	65	9	8
assure	10	26	17	1	ceremony	42	107	19	17
relief	14	38	11	10	concealed	22	74	24	11
occupy	20	38	12	3	delicious	33	73	14	13
probably	28	59	10	8	described	10	54	34	5
foreign	19	52	18	8	disappear	30	111	32	29
expense	8	84	75	2	dropped	4	31	28	1
responsible	29	57	10	6	elegant	35	93	18	8
beginning	13	62	50	1	emperor	33	86	21	11
application	34	96	39	13	excellent	31	99	30	21
difficulty	43	84	10	9	grateful	6	48	40	2
scene	23	41	8	4	heir	17	48	12	12
finally	20	85	39	12	hoarse	17	55	12	10
develop	29	90	38	8	icicle	44	113	25	15
circumstance	39	64	7	5	ignorance	44	64	9	5
issue	17	47	13	9	interfere	22	102	55	16
material	26	43	8	5	musician	30	67	16	7
suggest	14	30	6	5	neutral	32	132	59	13
mere	11	70	36	11	patience	11	33	15	4
senate	30	48	5	5	pigeons	21	83	30	18
receive	6	61	49	7	rehearse	24	90	33	17
respectfully	46	81	7	7	reverence	14	79	50	16
agreement	11	37	15	8	saucy	42	66	10	9
unfortunate	35	75	8	6	siege	22	133	83	21
majority	25	37	9	4	vegetable	20	68	33	8
elaborate	50	93	13	12	veil	12	68	44	10
citizen	18	19	2	1	wretch	23	82	19	12
necessary	43	69	13	4					
divide	6	29	22	3					
achieves	16	49	15	12			4675	1656	604
acquire	20	91	58	8					
almanac	64	94	8	8				2260	





## Chart XIII

## Misspellings According to Number of Letters in Word

## Column T

No. of letters in word	4	5	6	7	8	9	10	11	12	13	Total
No. of words	1	9	15	17	15	6	7	3	0	1	74
Total misspel- lings	27	347	785	1050	751	434	416	151	0	75	4036
Avg. no. mis- spellings	27	38.5	52.3	61.7	50	72.3	59.4	50.3	0	75	
% of all msp. for Col. T	.6	8.5	19.4	26.0	18.6	10.7	10.3	3.7	0	1.8	

## Chart XIV

## Column U

No. of letters in word	4	5	6	7	8	9	10	11	12	13	Total
No. of words	3	5	9	17	12	13	2	5	2	1	69
Total misspel- lings	186	338	474	1287	691	985	181	346	145	42	4675
Avg. no. mis- spellings	62	67.6	52.6	75.7	57.5	75.7	90.5	69.2	72.5	42	
% of all msp. for Col. T	3.9	7.4	10.1	27.5	14.7	21.0	3.8	7.4	3.1	.8	

In Column T words of 9 letters were misspelled an average of 72.3 times and words of 13 letters 75 times. There is no regular increase in number of times misspelled from the shortest to the longest words. In Column U the greatest number of misspellings was 90.5 for words of 10 letters. The number of times a word was misspelled was not here closely related to the length of the word in letters.

These same words of Column T and U, with their misspellings were next divided according to number of syllables:



## Chart XV

## Column T

			Total	Msp	%	Ave. msp
181	children spelled	12 monosyllables	2172	544	25	45.3
181	"	" 30 dissyllables	5430	1702	31.3	56.7
181	"	" 32 polysyllables	5792	1790	30.9	55.9

## Column U

181	children spelled	9 monosyllables	1629	579	35.5	64.3
181	"	" 23 dissyllables	4163	1436	34.4	62.4
181	"	" 37 polysyllables	6697	2660	39.7	71.8

## Columns T and U Combined

181	children spelled	21 monosyllables	3801	1123	29.5	53.4
181	"	" 23 dissyllables	9593	3138	32.7	59.2
181	"	" 69 polysyllables	12489	4450	35.6	64.4

While in the charts showing Columns T and U separately the percentage of misspellings and average number of misspellings are not in direct relation to the number of syllables, in a larger grouping, as in the chart showing Columns T and U combined there is a direct relation:

Average for monosyllables	53.4	misspellings
" " dissyllables	59.2	"
" " polysyllables	64.4	"

Hollingworth (24) did not compare the relation of misspellings according to number of letters to misspellings according to number of syllables. Of the relation of misspellings to number of syllables she found that 16% of error in recall was present in monosyllables, 25.7% in dissyllables, and 66% in polysyllables.





## Extent of Deviation from Correct Spelling

Mrs. Hollingworth (24) discusses this question under the heading:

### "Factors Limiting the Extent of Error"

"In examining and analyzing the great number of misspellings produced by our children, we saw that these misspellings were by no means absolutely 'wild' and uncontrolled. In other words, there was decidedly a limit to error. For example, when the word 'catalogue' was pronounced to be recalled, no child misspelled it 'dopintrkvxt-sawltny' and no child misspelled it 'il' or 'sg'. It was misspelled 'catalouge', and 'catatoge', 'catyear', 'catolague', 'catalgue', 'catologue', 'catalog', and 'catato' by our poor spellers, respectively, from which we see that the various errors occurred within rather narrow limits. For example, the initial letter is invariably 'c'; the whole initial syllable is, in fact, correctly reproduced in all cases; the number of letters used is in no case less than six, and in no case greater than nine; in only one case ('catyear') are letters introduced that are not included as an integral part of the correctly spelled word.

\* \* \* \* \*

"Of special interest to us is the fact that the three extreme cases of poor spelling show the same tendencies shown by the group which does not include them. . . . Inspection of the tables also shows that these three children (P. J., M. S., and M. G.) are much more likely to have several letters wrong in a single misspelled word than is the case with the others. M. G., for example, . . . . makes many more errors of the same kind as those made by the



group."\*

In our own study we found that in such a word as 'associate' (mentioned above) some misspellings will tend to be more unlike the correct spelling than others. Thus, one pupil wrote 'ascote' and one 'assfual' while some did not even have the initial letter correct. In tabulating the misspellings the writer underscored all forms of misspellings which were found in the 20 poorest papers and in no others. (See lists in appendix.)

A survey of these reveals the fact that those misspellings which vary most from the correct spelling are not nearly always made by the 20 poorest spellers. But the fact does remain that the group of misspellings which vary most from the correct spelling usually contain some misspellings made by the 20 poorest pupils.

#### Relation to Length

The words of Column T in Chart IX that are misspelled the greatest number of times seem to be rather long words than short ones. Word number 15 is 'associate', misspelled 85 times, word number 35, 'approval', was misspelled 89 times, word number 39, 'burglar,' was misspelled 121 times, and word number 72, 'wholesome', was misspelled 110 times. All the words of columns T and U were arranged according to the number of letters in the word. This, with the number of misspellings, average number of misspellings for words of the different lengths and percentages of the total misspellings for words of that column are shown in Charts XIII and XIV.

\* Hollingworth, Leta S., The Psychology of Special Disability in Spelling, Teachers College, Columbia University Contributions to Education, No. 88, 1918.





## VII

## The Causes of Poor Spelling

Since, whenever the psychology of the spelling process has been studied the tendency has been to study errors in spelling as being more instructive than correctly spelled words, reasons for incorrect spelling have been deduced by many experimenters and vary with the type of the experiments which each carried on.

Murray (38), in a study of the spelling ability of college students, found that, "Individual peculiarities form the most formidable handicap to the acquisition of habits of correct spelling,"\* and that physical defects are largely responsible. She says, "75% of poor spellers have some defect of hearing, vision, or articulation", and nearly as many a defect in more than one of these respects. Of good spellers not 1/6 had more than a minor defect."\*\*

Wycoff (62) says, "Knowledge of spelling begins with perception through eye or ear, and ends with the establishment of a train of memories. Somewhere along this line we may find a defective provision."\*\*\*As a result of two series of tests, on eye and ear impressions she concluded:

1. "Many constitutional bad spellers have defective sight; some defective hearing.

2. The same causes that have operated to impair the sight

\*Murray, Elsie, The Spelling Ability of College Students, Journal of Educational Psychology, Vol. 10:357-76.

\*\*Ibid.

\*\*\*Wycoff, Adelaide E., Constitutional Bad Spellers, Pedagogical Seminary, Vol. 2: 448-51, 1893.





or the hearing have frequently impaired the retentive power.

3. Constitutional bad spelling may in part be the result of a strong natural bent toward selective attention".\* The other conclusions she draws relate to methods of teaching.

Lasher (30) believes spelling is dependent almost entirely on habit: "While there are a few persons who simply cannot learn to spell, and a few others who have a 'sense of spelling' because they either see or hear accurately and possess a sure memory, the average person spells from habit.

"The root of the spelling evil, then, is in the most elementary grades, as here the foundation habits of spelling are really formed."\*\*

Lester (32) states that, "After all, the main cause of bad spelling is plain carelessness."\*\*\*

A number of persons have emphasized the importance of either auditory or visual perception. Their views have been discussed in Chapter V.

Cornman (15) and others have ascribed most poor spelling to aphasia, or lesions of the brain, thus making poor spellers pathological cases.

Brown (7) has made a study of learning to spell, with special reference to ie and ei. She concludes that correct spelling

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\*Wycoff, Adelaide E., Constitutional Bad Spellers, Pedagogical Seminary, vol. 2:448-51, 1893.

\*\*Lasher, G. S., Correct Spelling - A Habit, Teaching, vol. 1, no. 4, pp. 11-20, 1914.

\*\*\*Lester, J. A., Teaching Freshmen to Spell, English Journal, vol. 5: 404-10,



is dependent upon observation and attention, and that poor spelling is due to lack of, "Fixing the attention firmly upon the right form and holding it there for a sufficient length of time to make the record indelible."\*

Carmen (10) similarly concluded: "By noticing the results of the three tests given for observation in other things than words, we see a decrease of the difference in observational ability between the two classes as the data to be observed become more and more unlike words. Ability to spell well, therefore, probably implies not a general habit or power of observation but a special ability to notice small differences in words."\*\*

Otis (39), on the other hand, believes that, "No child will ever be able to spell foreign, bizarre, or guarantee until he has met these specific words. It is therefore believed that before spelling ability may be adequately measured for diagnostic as well as other purposes, it will be necessary to make provision for obtaining separate measure of these aspects of spelling ability."\*\*\*

But we do not believe that a child without having previously memorized every word he needs to spell would misspell all words not studied. Many words are in great part alike and the spelling of one undoubtedly aids in the spelling of another. The writer believes that the study of such words as 'caution', 'ovation', 'nation' would tend to reduce the spelling errors in 'relation' when a child met it

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\*Brown, Fannie W., Learning to Spell - Particularly ie and ei, Education, vol. 34:582-87, 1914.

\*\*Carmen, E. Kate, The Cause of Chronic Bad Spelling, Journal of Pedagogy, vol. 13:86-91

\*\*\*Otis, A. S., Reliability of Spelling Scales, School and Society, vol. 4:676-83







for the first time.

A study of some of the papers of Test II illustrate this fact. Child number 172 did not seem to know the use of 'tion' for the sound which it represents in such a word as 'faction'. In every case in Test II in which there was a word containing that sound he failed to use 'tion'. He wrote:

national - nashionel

investigation - investagion

consideration - conciderashion

application - appelachion

calculation - calachion

If he had been taught the sound and spelling of the syllable which is the same in all these words his spelling errors would undoubtedly have been reduced.

That children do not know the letters or combinations of letters that represent certain sounds is evident in some of the papers of Test II. They too often merely memorize the spelling lesson without associating certain sounds with certain letters. Child 172 spelled:

thorium - tohorum

bursa - bersow

quoin - quin

Child 173 either could not hear sounds distinctly or did not know the letters by which to represent the sounds. She misspelled:

loquat - lowhat

viator - thyator

fodient - foldent



shikra - shirah

laic - layig

Some of the children showed that wrong pronunciation was to blame for part of their spelling errors. Child number 170 misspelled:

conference - confrence

electricity - electristy

favorite - favort

medicine - medsion

Children often have idiosyncracies that should be studied and eliminated. Some have a tendency to omit syllables. Thus child number 173 misspelled:

circular - curclar

automobile - autombile

burglar - berber

realize - relize

stomach - stomck

telegram - telgram

distinguish - disguish

consideration - considation

Slips of the pen account for some errors. For instance children often write 'n' for 'm', or 'v' for 'w'.

Among the poorest spellers some were found with marked sensory defects. Child number 178 spelled words so much unlike their correct spelling that the experimenter attempted to find some reason for such great errors. He misspelled:

organize - rezzone





summon - serrnt  
 official - nessftion  
 accident - astem  
 invitation - invinted  
 impossible - infriable  
 associate - assfual  
 political - feranter  
 occupy - outyourself  
 almanac - alyonkalt  
 boutquet - bodkall  
 saucy - senlated

This child, it was learned, had had an abscess in his ear which had impaired his hearing. As is often the case with children, he had said nothing about it when the test was given and suffered the consequence of a poor mark rather than be conspicuous for his defect.

Hollingworth (24) studied special disability in spelling, rather than poor spelling found in combination with other disabilities. She reports, "According to our view these congenital disabilities result as other mental traits result, from the operation of the unknown laws of heredity and variation, and not from the superintention of a trauma or lesion, but for which the child in question would have had 'normal' ability. This is our view so far as spelling ability, at least, is concerned."\*

Thorndike (53) reports that the result of a study by E. L.

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\*Hollingworth, Leta S., The Psychology of Special Disability in Spelling, Teachers College, Columbia University Continuations to Education, no. 88, 1918.





Earle indicated that the correlation of .50 in spelling ability between children of the same family is due in large part to inheritance.

Rice's (43) study, in finding little relation between ability in spelling and methods employed, has led to the conclusion, not that the 'personal equation' of the teacher is the deciding factor, but that direct ancestry through variation and selection makes the greatest difference.

That home training is not the basic cause of differences in ability to spell has been brought out by Cornman (15).

Hollingworth (24) concluded that, "congenital disabilities result as other mental traits result, from the operation of the unknown laws of heredity and variation, and not from the supervention of a trauma or lesion."\*

Our own experiments have shown such cases as Mrs. Hollingworth treats to be extremely unusual. None were found among the 201 pupils with which the writer worked.

The correlations between spelling ability and general intelligence in our tests of seventh grade children indicated that high spelling ability usually accompanies high general intelligence. No child except A. B. was found failing in spelling only. (See individual cases, Chapter IV).

More significant were the correlations between the various types of spelling tests (See Chapter IV). These show that children who spell well not only hear well but see well, indicating the gen-

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\*Hollingworth, L. S., The Psychology of Special Disability in Spelling. Teachers College, Columbia Contributions to Education, No. 88, 1918.



eral power of observation. This is opposite to the theory of Car-men (10).

The study of individual cases, mentioned above, shows that spelling ability goes with general ability. The children who do not spell well are to be found in the lower part of the scale of distribution if general intelligence, or other school subjects are measured.

While heredity thus accounts for people who are called "constitutional bad spellers", yet it does not imply that there is no place for drill in spelling. That few people ever approach the limit of their capacity to do any one thing has been clearly shown by various practice and training tests (See studies on Learning Curves). Study of spelling words, development of better methods of teaching, and training of individual children in observation are all of direct benefit in the improvement of spelling.





## Summary of Conclusions

1. There is a significant correlation between spelling ability and general intelligence. People who have high general intelligence will not be expected to be found poor in spelling.

2. Both visual and auditory presentation are found to be of great importance in spelling. Children who spell well observe well in both the visual and auditory field.

3. Words which are determined by a series of tests upon a group of children to be approximately equal in difficulty, may not be equal to an entirely different group of children, even though both groups are composed of unselected children.

4. Words which are misspelled the greatest number of ways are not usually misspelled the greatest total number of times.

5. Words which are misspelled in a great number of ways present more difficulty in teaching than words which are misspelled the same total number of times but in relatively few ways.

6. The two ways that words were misspelled the greatest number of times contain almost one-half the total spelling errors. In Column T 54.8%, and in Column U, 48.3%.

7. Poor spellers make more errors than good spellers but not always worse errors.

8. The average number of misspellings for any word is directly related to the number of syllables the word contains.

9. The average number of misspellings for any word is not directly related to the number of letters the word contains. Words of 9 or 10 letters produced a higher average number of errors than words of 12 and 13 letters.



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## Appendix

### Illinois General Intelligence Examination

#### Sentences of Test II

##### Directions

Containing words from Columns T and U of Buckingham's

Extension of the Ayres Spelling Scale

#### Test III

##### Directions

List of words

#### Test IV

##### Directions

List of all ways words of Test II were misspelled, together

with number of times misspelled each way

Words grouped according to number of letters contained

Words grouped according to number of syllables



## Test I

University of Illinois

Urbana, Illinois

Bureau of Educational Research

General Intelligence, Operations

of Arithmetic and Silent Reading

The examination consists of three parts:  
general intelligence, operations of arithmetic and silent reading. The plan of test is here given:

- Test --- 1 Analogies  
2 Arithmetic Problems  
3 Sentence Vocabulary  
4 Substitution  
5 Verbal Ingenuity  
6 Arithmetical Ingenuity  
7 Synonym--Antonym

Monroe's Standardized Silent Reading Test

Operations of Arithmetic

- Test 1 Addition  
2. Multiplication  
3. Division  
4. Subtraction  
5. Addition and Subtraction of  
Fractions.  
6. Multiplication and Division of  
Fractions.  
7. Decimal Fractions.



## Test II

### Directions

Write your name at the top of the page.  
Give your present age, the date of your next birthday and the age you will be then.

The purpose of this test is to determine how well you can spell.

I will read sentences containing certain words which you are to spell.

Listen attentively while I read the sentence, but do not write. I will then pronounce the word in that sentence which you are to spell. Watch my lip movements as I pronounce it, then spell it.

Spell carefully. Do not hurry. You are not being timed.

### Example

He lost the pencil you bought.

Spell "pencil".





## Column T

Can you guess which apple I took? Give me the circular piece of tin. The argument resulted in a quarrel. This jar has a volume of one gallon. We will organize a basket ball team. Will they summon the witnesses to court? He is an official of the city. The bandits murdered their victim quickly. I will estimate the entire cost before I buy. As a result of the accident both bicycles were ruined. When the invitation came the girls were gone. That was the reason they did not accept at once. It will be impossible for us to go. I would not concern myself about the result. Even in business Mr. Smith did not associate with many people. Our automobile is a very old model. Then they tried by various means to remove the ring. Why did they decide to move away? This ticket should entitle me to one of the best seats. Much of the political excitement is over. July fourth is a national day for celebration. On Armistice day we held our most recent celebration. Has he been successful in business here? As I cannot be sure, I refer you to our manager. A minute seems very short when one is busy. Possibly I ought to read the entire book. Must I bring an excuse for my absence? I will come if the conference is to be short. Please sing for us at the Wednesday afternoon tea. I really ought to start home now. The celebration lasted all day. Can you spell 'folks' correctly? My head aches when I read too long. He told funny stories for the amusement of the crowd. Is the teacher's approval necessary? A banana tree has enormous leaves. The biscuits were burned badly. He bruised his knee. This unusual burglar took no jewelry. The changeable silk was woven of green and blue threads. That chimney should be cleaned. After the choir sang the minister preached. Does the entertainment commence at noon? Many teams will



compete in this athletic meet. It is wrong to deceive another. Some discoveries are of little use. We use electricity for cooking. She made only one error. We often say, "There are exceptions to all rules." Whittier is my favorite author. Are these genuine pearls? I picked a handful of the small berries. What hymn was sung first? We thought the investigation was thorough. Easter lilies sometimes grow very tall. Was the liquor thrown away? He won the gold medal in the broad jump. Will he study medicine later? Someone told me that the nurse was ninety years old. I can scarcely realize that vacation is so near. Did their first king reign long? Such scenery as this is worth enjoying. A severe cold weakens one. She slipped on the ice and broke the strap of one skate. Do not sneeze so noisily. We use stationary desks and seats. A cow's stomach is divided into four parts. Draw the line as straight as possible. You will succeed if you keep trying. Yesterday a telegram came for you. I hear the boys whistling now. We should eat only wholesome food. You can make a flower wreath like this. Who would like to wrestle with him?





## Column U

I meant to take the smallest sponge. Mother does not like the earliest peaches. Tell me whether you have polished your shoes. It is easy to distinguish red from blue. Let us give consideration to this telegram. England established colonies on the new continent. Can you assure me that you will not go away? We gave money to the relief of starving children. Your cousin will occupy the house next door. Her husband will probably go to camp soon. Many foreign children attend our school. As the expense of the trip was heavy, I borrowed money. Mary is responsible for breaking the dish. Read four pages beginning with page seven. He was told to make application for a ticket. But he had difficulty in getting to the desk. He saw only the last scene of the play. The cows finally came up from the pasture. We knew that tadpoles develop into frogs. What circumstance kept him at home? The daily issue of the paper comes in the morning. Here is the material for your new dress. I wish you would suggest another game. The pond is a mere mudhole. Our Senate is a part of Congress. We all like to receive gifts. Speak respectfully to the visitors. They made an agreement to sell the house. The unfortunate man went to his doom. The majority voted for Mr. Smith. Their dresses were too elaborate for street wear. It is an honor to be a citizen of the United States. Mary thought it necessary to meet her guests at the train. When we come back we will divide the candy. If he achieves fame he will be happy. Some men try to acquire a large fortune. While we were waiting the druggist gave us an almanac to read. Many ancient pictures are interesting. Buy two pencils apiece if you have enough money. As the cloud approaches dust swirls in the road. Her father is an attorney in Chicago. Each child picked a bouquet for his room. After the last calculation we were told the



correct answer. When the ceremony was over we rode home alone. A shaggy dog was concealed under the chair. Turkey is delicious if stuffed with dressing. The museum described here, has many interesting relics. When the stars disappear at night, it becomes very dark. Have you dropped your handkerchief? During the fire the elegant draperies were ruined by smoke. Then the emperor chose a new cabinet. Do you expect an excellent grade? He did not seem grateful for the money. Everyone cannot be heir to a fortune. Breathing so much dust will make me hoarse soon. A long icicle hung from the corner of the house. We believe ignorance makes people unhappy. We will come later if that does not interfere with your plans. Perhaps the musician had no home. Holland remained neutral during the war. It takes patience to paint china. All the pigeons here belong to the two boys. Let us rehearse the play every evening. Bow your head with reverence during the prayer. This saucy little bird kept chirping at the window. Did the siege of the fort last a month? This vegetable is common in France. Then the veil was lifted from the monument. The poor wretch lived in a filthy old cabin.



List of All Ways Words of Test II Were  
Misspelled, Together With Number  
of Times Misspelled Each  
Way

Words underscored were misspelled in that  
way by one of the twenty poorest spellers  
but by none of the better spellers.

gess	5
gues	2
<u>guest</u>	4
<u>guss</u>	2
4	13





cercular	2	<u>surler</u>	1	arganize	1
cicurlar	1	29	49	<u>oragenize</u>	1
cilicular	1			oragnize	1
circlelar	1	agiment	1	oranagied	1
circler	2	agrument	2	oranize	1
circulair	1	agument	1	<u>organice</u>	1
circulare	2	<u>agurment</u>	1	organinze	1
circulature	1	<u>arayment</u>	1	organise	6
circuler	6	<u>ardment</u>	1	<u>organnise</u>	1
circuliar	2	argement	7	orgenize	3
circullar	1	argment	2	<u>orgenrize</u>	1
circuluar	2	arguement	20	orgianse	1
cirgular	1	argumeant	1	<u>originaze</u>	1
cuclier	1	argunment	1	originise	1
<u>cuclur</u>	1	<u>arrgent</u>	1	organizae	1
culicular	1	arugment	1	originize	1
cullicer	1	arument	2	originse	1
curcelelar	1	orgument	1	orgonize	1
curcilar	1	15	43	<u>orgnize</u>	1
curclar	2			organize	1
curcular	7			orinize	1
curicular	1			<u>ornization</u>	1
<u>cyclar</u>	1			<u>rezzone</u>	1
securlar	2			23	39
securler	1				
sircular	3				
sirgular	1				
suclier	1				



<u>samun</u>	1	<u>valume</u>	1	affectial	1
serrnt	1	voleum	3	afishal	1
someofthen	1	voluem	1	<u>nessftion</u>	1
somen	4	volum	13	<u>offacial</u>	1
someun	1	volumn	24	<u>ofechtial</u>	1
sommen	2	<u>volun</u>	1	offecial	4
sommon	4	6	43	offeseal	1
<u>sumean</u>	1			offical	44
sumen	1			offichel	1
sumit	1			offishal	1
summed	1			ofical	3
summen	3			<u>oficel</u>	1
summin	4			official	7
summine	1			ofictial	1
summond	2			ofiscial	1
sunmued	1			<u>ofishal</u>	2
summun	3			16	71
sumn	1				
sumnon	2				
sumon	19				
<u>sumune</u>	1				
21	55				





vestum	1	<u>astimake</u>	1	accadent	1
<u>vicenty</u>	1	esimate	1	<u>accagant</u>	1
<u>vicom</u>	1	<u>esmintet</u>	1	accedent	2
vicitim	1	estamate	27	accedient	1
victem	3	estamitate	2	<u>acctident</u>	1
victen	1	estemant	1	accidant	2
victime	2.	estemate	5	<u>acdient</u>	1
victimn	1	estimante	1	<u>acendent</u>	1
victin	1	estimiate	1	acident	6
victiom	2	estmate	8	apcedent	1
<u>victiomn</u>	1	estomate	1	<u>axcedent</u>	1
viction	1	estumate	1	axceident	1
<u>victition</u>	1	extimate	1	axcident	4
victom	25	<u>extremate</u>	1	axident	2
victome	1	14	52	<u>exactance</u>	1
victon	1			<u>exadent</u>	1
victum	24			<u>excedient</u>	1
victume	2			17	28
<u>vitcom</u>	1				
19	71				



<u>endentation</u>	1	<u>emposable</u>	1	acceite	1
envitation	1	emposiable	1	accoassate	1
indepatient	1	infriable	1	accoate	2
indifention	1	imposable	4	accocate	1
infatation	2	<u>imposeable</u>	1	accociate	1
<u>infication</u>	1	impossable	10	<u>accolcate</u>	1
invantation	1	imposible	32	accosaite	1
invatation	24	imposibal	3	accosate	1
invation	24	impossiable	3	accosiate	8
inventation	3	impossibal	1	accositate	1
invetation	5	impossibile	1	accossiate	1
<u>invinted</u>	1	<u>impostable</u>	1	aceoceate	1
<u>invitetion</u>	1	<u>impssible</u>	1	<u>acocate</u>	1
invition	3	13	60	acoceait	1
<u>ivitation</u>	3	<u>comcernt</u>	1	acosiate	1
15	72	concern	3	acquainte	1
		concertain	1	acsociate	1
accept	8	concrne	1	asasioate	1
ackcept	1	concurr	1	ascociate	1
acsept	1	conscerne	1	ascoate	2
actsept	1	<u>consercion</u>	1	asociate	1
axcept	5	concern	35	ascossiate	1
<u>axcessed</u>	1	conserne	1	ascote	1
exact	1	<u>consted</u>	1	asociate	1
except	3	consirn	1	asocate	1
8	21	consirne	1	<u>asocceate</u>	1
		consurn	7	asociate	7
		consurne	2	<u>asocnate</u>	1
		14	57	asoliaite	1



<u>asooate</u>	1	<u>osicatate</u>	1	<u>vairous</u>	1
asociate	1			varais	1
asotite	1	57	85	<u>varaeus</u>	1
asowitate	1	<u>artamable</u>	1	vares	1
<u>assfual</u>	1	<u>atumobile</u>	1	varieous	1
assiate	2	<u>atuomibile</u>	1	varies	6
assicate	1	<u>atuomoiable</u>	1	varios	1
assicoate	2	autimobile	1	varous	1
assisiare	1	autmobile	1	varries	6
assoate	3	<u>autoilmoble</u>	1	varrious	5
assocait	1	<u>autombile</u>	1	veries	1
associate	2	automible	17	verieses	
associtate	1	automi bole	1	verious	16
associte	1	automobil	3	verrious	2
assoiare	3	automoible	1	versis	1
assoicate	2	automobile	8	veryeous	1
assoiciate	2	autumiabile	1	<u>veryest</u>	1
assoitrate	2	<u>outomobile</u>	1	veryious	2
assosiare	3	15	40	<u>veryous</u>	1
assositrate	1			verys	1
<u>assostate</u>	1			<u>veryses</u>	1
assotiate	1				
occaitate	1			21	51
occate	2				
occesate	1				
ocociate	1				
ossiare	1				





decied	4	bolitical	1	<u>politicole</u>	1
<u>dedice</u>	1	<u>feranter</u>	1	polittle	1
<u>desiade</u>	1	<u>finckel</u>	1	<u>politol</u>	2
deside	41	<u>floyacal</u>	1	<u>pollial</u>	1
<u>decide</u>	2	<u>phaletical</u>	1	polotical	3
disciede	1	ploticial	1	polttcal	1
6	50	poletitcal	1	potical	3
<u>entidel</u>	1	polidical	1	poticale	1
entidle	4	polietical	1	poticial	1
entilite	1	polical	1	<u>poticial</u>	1
entille	1	<u>policatal</u>	1	39	53
entital	3	policial	1		
entitel	1	policical	1		
entite	1	policilate	1		
entitile	1	policitas	1		
intatle	1	polictal	3		
inteltile	1	polictial	1		
<u>intiadle</u>	1	polictical	1		
intictl	1	polictle	1		
intidal	3	politacal	2		
intidle	5	politacial	1		
intildle	1	politacil	1		
<u>intile</u>	1	polital	2		
intilitle	1	<u>politcal</u>	1		
intille	1	<u>politcale</u>	1		
intital	6	politicial	1		
intitale	3	politecal	1		
intitle	22	politial	5		
21	60	polittle	2		



<u>masal</u>	1	reacent	1	<u>besness</u>	1
<u>mashial</u>	1	<u>reasant</u>	1	bessness	1
nasanal	1	reasant	1	<u>binissessess</u>	1
nashanal	2	<u>reasonent</u>	1	business	1
nashial	1	reasont	1	bisness	4
nashinal	1	reccent	2	bisnessus	1
nashional	1	receant	1	<u>bissness</u>	1
<u>nashional</u>	1	<u>recenate</u>	1	buesness	1
<u>nashnel</u>	1	reciant	1	buiness	1
<u>nasnal</u>	1	recient	5	buinesss	1
natanal	1	rescent	4	buisness	6
<u>nathional</u>	1	rescite	1	buismess	1
natinal	4	resent	15	buisness	35
natinol	1	resiant	1	<u>buisser</u>	1
<u>natnal</u>	1	resient	1	buisnes	1
natonial	1	resiont	1	buisness	1
<u>noshial</u>	1	resont	3	bunissness	1
17	22	ressent	1	<u>businet</u>	1
		<u>restant</u>	1	business	3
		19	43	busiess	1
				busseness	1
				bussines	1
				bussiness	7
				<u>bussness</u>	2
				<u>busyness</u>	1
				25	76





refere	8	aught	22	conference	2
referre	1	<u>aut</u>	1	comfrence	2
reffer	4	bought	1	comfurence	2
refir	1	hought	1	concurence	1
refur	13	<u>oct</u>	1	conferance	6
refure	25	<u>oft</u>	1	confernance	1
<u>refurn</u>	1	ott	2	confernce	5
7	53	ough	1	conferres	1
menit	1	out	3	conferunce	1
mienute	1	<u>oute</u>	2	<u>conflunce</u>	1
<u>minate</u>	2	10	35	conforence	2
minent	1	abcence	26	confrance	2
minet	2	abcense	19	<u>confremce</u>	2
minite	1	<u>abcenuis</u>	1	confrence	2
minitue	2	abcunse	1	<u>confurance</u>	1
minnet	1	abcunte	1	confurase	1
minniate	1	<u>abenues</u>	1	confurnce	3
minnute	1	absance	1	<u>converence</u>	3
minot	1	absence	1	18	38
<u>minte</u>	2	abseness	3		
minuet	5	absense	5		
minuit	2	absenuess	1		
minuite	5	<u>adcence</u>	1		
munit	2	11	57		
ninute	1				
17	31				



Wedenday	3	<u>cebration</u>	1	acaks	1
Wedensday	2	celabration	27	aces	3
Wedinsday	1	celbratation	1	achs	11
Wednessday	1	<u>celbration</u>	4	ackes	25
Wednsday	2	celeabration	1	acks	27
Wedsenday	1	<u>celebartion</u>	1	acts	1
Wedsnday	1	celebation	2	ahes	1
Wenday	4	celebraction	1	akes	11
<u>Wendasy</u>	1	celerbration	1	8	80
Wendensday	1	celibration	1		
Wendesday	3	cellebration	1		
Wendnesday	1	<u>cellibration</u>	1		
Wendsday	2	<u>salo</u>	1		
Wenesday	1	selabration	1		
Wensday	7	<u>selebration</u>	1		
Wensenday	1	15	45		
Wesenday	1				
<u>Wesnday</u>	1	coaks	1		
		foax	1		
18	34	<u>flokes</u>	1		
<u>readly</u>	2	floks	2		
realey	3	fokes	1		
<u>realily</u>	1	<u>foulks</u>	1		
reality	1	foukes	1		
realy	51	7	8		
relay	1				
<u>relealy</u>	1				
7	60				



amesument	1	<u>aprovel</u>	1	banaa	1
<u>amment</u>	1	<u>alprovel</u>	1	bananaa	1
ammusement	2	appoovel	1	bananna	12
ammusment	6	approval	1	banano	1
amnusment	1	approveal	2	banna	22
amousement	1	aprovel	15	bannaa	1
<u>amousment</u>	2	approvell	1	bannaba	1
<u>amuesant</u>	1	approvely	1	bannah	1
<u>amuicment</u>	1	approvial	14	bannak	1
amument	1	approvele	2	<u>bannamo</u>	1
amunsment	1	approwel	1	bannana	12
amusent	1	appruel	1	bannanna	3
amusiance	1	aproovel	1	bannna	1
amusimate	2	aprovable	1	benesant	1
<u>amusiment</u>	1	aproval	16	mammoth	1
amusment	45	aprovale	3	<hr/>	
amusmunt	1	aproveable	1	15	60
amusument	1	aproveal	5		
<u>amutment</u>	1	aprovel	9		
<u>asmoutement</u>	1	aprovial	7		
<u>assmusment</u>	1	aprovil	1		
asument	1	aprovl	1		
22	74	apvoal	1		
		<u>opproval</u>	2		
		24	89		





bescuits	1	briused	1	buggar	1
biceous	1	brosed	2	buggular	1
<u>bicuats</u>	1	broused	2	bugilar	1
biouits	1	brozed	1	buglar	9
bicousets	1	bruezed	1	bugluar	1
biscates	1	<u>bruide</u>	1	bugraler	1
bisciuts	1	brused	51	bugular	9
biscuets	1	brusied	8	buralar	1
biscuites	3	bruzed	4	<u>burbliar</u>	1
biscutes	3	burised	2	burgalar	1
biscuts	31	bursd	1	burgaler	4
biskets	1	<u>bursed</u>	1	burgalery	1
bucits	1	<u>burts</u>	1	burgalor	1
buisuits	2	13	76	burgarl	1
buisuits	2			burghlar	2
buiscuts	4	bargular	1	burghler	17
buscists	1	baruglar	1	burgler	16
busoits	1	<u>begglar</u>	1	burglur	1
<u>busciuts</u>	1	<u>berber</u>	1	burgular	31
buscuits	6	berglar	1	burguler	2
busicuts	3	<u>bergular</u>	1	burgurlar	1
<u>busites</u>	1	birgular	1	burgury	1
<u>buskits</u>	1	brugial	1	<u>burlary</u>	1
23	69	bruglar	2	<u>burleyer</u>	1
		<u>buarglar</u>	1	38	121
		bugalar	1		
		bugaler	1		
		bugeral	1		
		<u>bugarlr</u>	1		



canabul	1	chemey	1	<u>chire</u>	1
chainable	2	chenney	1	chior	15
chainbubble	1	chimbley	1	choire	2
chaingable	1	chimbly	1	chore	2
<u>chamible</u>	1	chimely	2	chorus	1
<u>chanable</u>	1	chimeny	7	chour	2
changable	66	<u>chimery</u>	1	<u>chroy</u>	1
changble	1	<u>chinge</u>	1	qior	1
changebel	1	<u>chiminey</u>	1	quhor	1
changeble	13	chimisey	1	quior	4
changebril	1	chimley	1	<u>quir</u>	1
changeful	1	chimmey	3	quire	26
<u>changeible</u>	1	chimminy	1	<u>quoir</u>	1
changibile	1	<u>chimmley</u>	1	12	58
changible	1	chimmney	1		
<u>cheverable</u>	1	chimmny	1		
<u>clangibal</u>	1	chimny	1		
<u>shangable</u>	1	chimne	2		
18	96	chimny	6		
		chinmeny	1		
		chinmey	1		
		<u>chinney</u>	1		
		<u>chinny</u>	2		
		23	39		





comence	24	compeat	33	discoveries	1
comenece	1	compeate	2	discovery	1
<u>comened</u>	1	compeet	1	descouvery	1
comensed	1	compeit	1	discoourveries	1
<u>comense</u>	1	<u>compelent</u>	1	discoveres	8
<u>comenst</u>	1	compelete	1	discovereys	1
coments	1	compelte	1	discoverys	11
<u>comincence</u>	1	compet	10	discoveries	1
commense	4	compit	1	discovries	1
comments	1	<u>compleate</u>	1	discowrys	1
commet	1	complet	3	discrovery	1
commince	1	complete	7	<u>discularies</u>	1
<u>commints</u>	1	<u>conpeat</u>	2	12	29
comnence	1	13	64		
comnenst	1	<u>deceave</u>	1		
conmenced	1	decad	1		
<u>conneneh</u>	1	decade	1		
17	43	decet	1		
		<u>deceve</u>	1		
		decieve	46		
		decive	12		
		deseave	3		
		deseive	2		
		deseve	1		
		<u>desident</u>	1		
		desive	2		
		<u>desieve</u>	1		
		<u>diceive</u>	1		
		14	74		



eleatriœ	1	electrifty	1	<u>aair</u>	1
<u>elecantechs</u>	1	electritisy	1	aire	1
elecitresity	1	electritive	1	<u>arer</u>	1
eleclectice	1	electry	1	<u>arie</u>	1
<u>elecrasity</u>	1	electryicity	1	arior	1
<u>elecrted</u>	1	electy	1	<u>arreo</u>	1
elecrticity	1	<u>eletiscrity</u>	1	arrior	1
electcrisity	1	eletrice	1	<u>arro</u>	1
<u>electeristy</u>	1	eletriciety	1	arror	1
<u>electicor</u>	1	eletricity	1	ayr	1
<u>electiourery</u>	1	<u>eletrioresite</u>	1	eror	4
electirisity	1	eletricy	1	err	2
<u>electity</u>	1	eletrisity	1	errior	1
electory	1	<u>elictrecty</u>	1	erroirer	1
electrcely	1	elicttrisety	1	<u>erro</u>	1
electric	1	<u>elitircy</u>	1	<u>errour</u>	1
electriccy	1	<u>elitricity</u>	1	16	20
electricly	1	46	77	acceptions	20
electricisioty	1			aceptions	4
electricity	1			eccephon	1
electricly	1			eccept	1
electrics	1			ecceptions	9
electricty	15			ecceptions	7
electricy	2			ecpetions	1
electriety	1			ecption	1
electriss	1			<u>excelded</u>	1
electrisity	15			excipits	1
electrisority	1			exeptions	2
electristie	1			expection	1



exsepations	2	cenget	1	jenuuyne	1
<u>exseption</u>	2	ganuine	1	jинуin	1
14	53	genine	2	jounion	1
fatrail	1	<u>genion</u>	1	junin	1
favator	1	genioun	3	<u>junine</u>	2
<u>faverer</u>	1	geniune	1	34	46
faverite	3	<u>geniyen</u>	1		
faveroit	1	gennuine	1	handeful	2
faveroite	1	genouine	1	handfule	1
faviorite	1	genuin	1	handfull	36
<u>faviort</u>	1	genuion	4	hand-full	2
faviorte	1	genunn	1	hanful	1
faviroat	1	<u>geuan</u>	1	<u>pan full</u>	1
favirote	2	<u>geunt</u>	1	6	43
<u>favit</u>	1	<u>geunual</u>	1		
favorate	9	ginuine	1		
favorit	6	ginune	1		
<u>favort</u>	2	guen	1		
favorte	1	guenine	1		
favriot	1	guenurn	1		
<u>feautor</u>	1	guine	1		
feriate	1	guinue	1		
<u>flavorate</u>	1	guniea	1		
vaforate	1	januin	1		
<u>vaveriot</u>	1	januine	2		
22	39	<u>janwine</u>	1		
		<u>jenanly</u>	1		
		jenuine	5		
		jenunian	1		





heim	1	envestigation	1	<u>invistation</u>	1
heme	1	envestion	2	invistigation	1
<u>hime</u>	1	evestigation	1	<u>investigation</u>	1
himm	1	invastion	1	32	75
hm	1	<u>invatakation</u>	1		
<u>hmny</u>	1	invation	1	<u>layees</u>	1
<u>hmyn</u>	1	invecestion	1	<u>leles</u>	1
<u>hpym</u>	1	<u>invesagation</u>	2	lellies	1
<u>hunen</u>	1	invesgation	4	lies	1
huym	1	invesgotion	1	lileis	1
hyem	1	investacation	1	liles	4
hygm	1	investagaion	1	lililies	1
hym	11	investagasion	1	lilliys	2
hymm	2	investagastion	1	<u>lilles</u>	1
hypm	1	investagation	26	lillies	31
<u>thym</u>	1	investagetion	1	lilyes	6
16	27	<u>investagion</u>	4	lilye	6
		investagition	1	lulies	1
		investation	2	<u>lyles</u>	1
		investavigation	1	<u>lylies</u>	1
		investegation	4	15	59
		investgation	4		
		investiaation	1		
		investication	1		
		investigavtion	1		
		investion	4		
		invetagion	1		
		<u>invetekate</u>	1		
		investigation	1		



<u>lectior</u>	1	maddl	1	<u>meadison</u>	1
licoar	1	madle	1	<u>meadits</u>	1
licer	1	<u>meadal</u>	1	<u>mecidan</u>	1
licker	4	meadel	1	medacin	1
lickor	6	meadle	4	medcian	1
lioor	10	meals	1	medcine	1
licore	1	meatle	1	<u>medcion</u>	1
licour	2	medbal	1	medecine	6
liquior	1	meddle	6	medection	1
licquire	1	medel	1	medeson	1
licquor	8	medial	2	mediance	1
lictor	1	medle	4	medican	8
lictur	1	metal	1	medicane	3
<u>ligure</u>	1	metial	1	medicen	3
liour	1	<u>model</u>	1	medicene	1
liqior	2	15	27	medician	10
liquor	1			medicime	1
liqoir	2			medicion	1
liqor	3			medicne	1
liqour	2			medicon	2
<u>liquar</u>	1			medicson	1
liquer	3			medinane	1
liquior	14			medisen	1
liquir	5			medison	8
<u>liure</u>	1			medition	1
<u>liugor</u>	1			medsion	1
26	75			<u>medson</u>	1
				<u>menson</u>	1





<u>minety</u>	2	realice	1	raign	2
<u>minty</u>	1	<u>realilise</u>	1	rain	7
ninegthy	1	realilize	1	raine	1
<u>ninetie</u>	1	realise	6	rained	1
<u>ninitine</u>	1	realizize	1	raing	1
ninity	8	reallize	3	<u>raingn</u>	1
nintey	3	relazie	1	reaign	1
ninty	49	reliace	1	regien	1
<u>nity</u>	2	reliase	1	regin	3
9	68	reliaze	2	regine	1
		<u>reliese</u>	1	region	2
		relieze	1	regn	1
		relige	1	reigan	1
		relis	1	reigen	1
		relise	6	reighn	2
		<u>relisize</u>	1	reigion	1
		relizate	1	<u>reigne</u>	1
		relize	26	reigon	3
		<u>relizelive</u>	1	reigun	1
		<u>relizine</u>	1	rein	12
	20		58	reine	1
				riegn	2
				rien	2
				rign	3
				<u>ruin</u>	1
				25	53



<u>ceneries</u>	1	cever	1	<u>suvery</u>	1
cenery	17	cevier	1	30	43
<u>cenesany</u>	1	savear	1		
cenior	1	savere	1	scliped	1
sceanery	1	<u>seaveir</u>	1	sclipped	1
scenary	1	seaver	1	silept	1
scenenery	1	<u>senver</u>	1	<u>sipped</u>	1
sceney	1	serivor	1	sliped	53
scenry	3	servear	1	<u>slipted</u>	4
scernery	1	server	2	6	61
scerney	1	servere	1		
scinery	1	<u>sevar</u>	1		
screnary	1	sevear	9		
seanary	1	seveior	1		
secenery	3	seveir	2		
seinery	1	<u>seveoir</u>	1		
sencery	2	sever	11		
<u>senorly</u>	1	severir	1		
<u>senecy</u>	1	severor	1		
senerey	1	severy	2		
senerie	1	sevier	2		
senery	18	sevire	1		
senior	1	<u>sevor</u>	1		
<u>sentary</u>	1	sevre	1		
sentry	1	sirvire	1		
serenry	1	<u>siveror</u>	1		
<u>sienery</u>	1	surver	1		
27	65	suvear	1		
		suver	2		



<u>chnies</u>	1	<u>sation</u>	1	stomac	4
scheeze	1	<u>spacenary</u>	1	stomace	1
schneeds	1	<u>stacionary</u>	1	stomache	5
seneze	2	<u>stainanery</u>	1	stomack	26
<u>senzed</u>	1	stainiary	1	stomahe	1
<u>smeeze</u>	1	stainitory	1	<u>stomarch</u>	1
smeize	1	staintary	1	<u>stomck</u>	1
smize	1	staionery	2	stomick	1
sneaze	3	stamary	1	stomit	1
sneese	2	stanationary	1	stommac	1
sneez	2	<u>stanessary</u>	1	stommach	1
snege	1	stanionary	2	stomuck	4
sneige	1	stanior	2	stumach	7
snese	1	stashionory	1	<u>stumack</u>	1
sneze	19	stasiary	1	stumic	1
snezze	8	statesionary	1	stumick	1
snize	7	<u>statiary</u>	1	stummach	1
snizz	2	statinory	1	stummest	1
snyze	1	stationananary	1	stump	3
<u>szeeze</u>	<u>1</u>	stationay	1	<u>stunick</u>	<u>1</u>
20	57	stationery	32	20	63
		statoniny	1		
		<u>statonory</u>	<u>1</u>		
		23	57		





				92.	
straigh	2	telagram	23	whilling	1
strait	5	<u>telegrah</u>	1	whilsting	1
strate	1	telegrahm	3	whiseling	3
streight	6	telergram	1	whisiling	2
striaght	2	telegran	1	whisleting	1
striaight	1	telephone	1	whisling	14
<u>stright</u>	10	telgram	8	whislting	1
7	27	<u>telgrame</u>	1	whisltn	1
sceed	1	<u>teligran</u>	1	whissling	1
sceede	1	tellagram	4	<u>whisten</u>	1
<u>sucead</u>	1	tellegram	6	<u>whisting</u>	1
succed	35	telligram	1	whistaling	1
succede	6	<u>telogram</u>	1	whisteling	9
succeede	3	13	52	whistiling	2
succeseed	1			whisting	1
<u>sucessed</u>	1			whistleing	22
suced	1			<u>whistlen</u>	1
sucede	1			whistten	1
succeed	9			<u>whiting</u>	1
<u>suceede</u>	1			whitselling	1
<u>suceided</u>	1			wilsing	1
sucessed	1			wishling	1
sucsseed	1			wishtleing	1
suscede	1			<u>wisilng</u>	1
susceed	1			wisling	3
<u>suseed</u>	1			wislling	1
<u>suxced</u>	1			wissling	1
19	68			wistleing	1
				<u>wistling</u>	2



						93.
<u>holdsome</u>	1	reaf	3	prestle	1	
holesom	3	<u>reafe</u>	1	racal	1	
holesome	13	reath	17	<u>racel</u>	1	
holesum	3	reathe	1	<u>rashel</u>	1	
holesume	1	reef	4	<u>rasial</u>	1	
hollsome	1	reeth	1	rassel	1	
holsim	1	reif	2	rescel	1	
holsom	8	reight	1	<u>resecle</u>	1	
holsome	16	reighth	1	<u>resel</u>	1	
holsone	1	reith	6	resial	1	
holsum	22	rek	1	<u>ressal</u>	1	
holsume	3	releve	1	ressel	2	
<u>hornert</u>	1	wearth	1	restle	2	
hoslem	1	wreaf	2	russel	1	
houlsome	1	<u>wreaght</u>	1	<u>wesal</u>	1	
vlsome	1	wreah	1	<u>wessle</u>	1	
wholesem	1	wregth	1	whrestle	2	
wholesom	5	wreith	1	<u>wrasle</u>	1	
wholesum	6	wreth	2	wrastle	2	
wholesume	1	<u>writh</u>	1	wreasle	5	
wholsom	3	20	49	wreastle	2	
wholsome	15			wrech	1	
wholsoom	1			<u>wrelst</u>	1	
<u>whossome</u>	1			wresale	2	
24	110			wreschel	1	
				wresel	1	
				wresle	1	
				<u>wressel</u>	1	
				wressle	1	





wrestal	1	weather	16	<u>desinguish</u>	1
wrestel	6	<u>weathor</u>	1	desinguish	1
<u>wristle</u>	1	wether	3	<u>destingues</u>	1
32	47	<u>wheagher</u>	1	destinguish	3
		wheater	1	<u>diguished</u>	1
<u>ment</u>	51	wheather	51	disquinshed	1
1	51	wheathere	1	disquis	1
earirlest	1	wheither	2	<u>disquish</u>	1
ealeryest	1	<u>whelter</u>	1	<u>disqunish</u>	1
ealist	1	where	1	disqunquish	1
<u>eariest</u>	1	wheter	1	<u>distanglish</u>	1
earilest	3	whethe	1	<u>distengush</u>	1
earlest	17	<u>whatever</u>	1	distincurs	1
earlester	1	whither	1	distingish	6
earlestest	1	<u>wrerler</u>	1	distinglish	2
<u>earleyist</u>	1	15	83	distinguesh	1
earlies	2			distinguest	1
earliesed	1			distinguishe	1
earlist	2			distingulisheg	1
earlliest	1			distingulish	1
earlyest	10			distingush	6
earlyiest	2			distingwish	3
earlyist	3			distinlish	1
<u>erliest</u>	1			<u>distinguse</u>	1
17	49			distintuished	1
				distiunques	1
				distivantive	1
				distqunish	1
				distuinquish	1



<u>distunges</u>	1	cansiderion	1	<u>consyderation</u>	1
distungish	1	concederation	2	30	42
distunglish	1	conceration	3		
distunguish	1	concerdation	1	<u>colinesh</u>	1
distungush	1	<u>concerteration</u>	1	colinies	5
distunish	1	concoideration	5	<u>colinys</u>	1
<u>disturion</u>	1	conderation	4	<u>colition</u>	1
<u>restinguish</u>	1	condieration	1	<u>colmce</u>	1
37	53	consederation	1	colnies	1
		conseratition	1	<u>colone</u>	1
		conserdionation	1	colonest	1
		<u>conserdition</u>	1	coloneys	1
		consertation	1	colonyies	1
		<u>considaration</u>	1	colonish	1
		<u>considation</u>	1	colonys	4
		<u>considerashion</u>	1	<u>conlies</u>	1
		<u>considerion</u>	1	13	20
		considerration	1		
		considertion	2		
		considoration	1		
		considratiion	1		
		considsion	1		
		consiration	1		
		consisition	1		
		consisled	1		
		consiteration	2		
		<u>consition</u>	1		
		consitration	1		
		consteration	1		



<u>ashoure</u>	1	accopy	2	<u>perpably</u>	1
ashsure	1	accupie	1	pobably	1
<u>ashure</u>	1	accupy	3	<u>prabaly</u>	1
assere	1	<u>hockpaly</u>	1	proabably	1
assuar	1	occopy	2	proably	4
<u>assue</u>	1	occopy	1	probally	1
assur	1	<u>occup</u>	1	probaly	10
asure	17	occupany	1	probbly	1
<u>assurie</u>	1	occuphy	1	probely	2
<u>ausur</u>	1	occupie	12	probibaly	1
10	26	occuply	1	probibly	4
		occuppy	3	probability	1
defeat	1	occupuy	1	probily	6
realef	1	<u>ocply</u>	1	problaly	1
<u>refeel</u>	1	<u>ocpy</u>	1	probley	1
releaf	10	occuppy	1	<u>problie</u>	1
<u>releafe</u>	2	ocupy	2	problie	8
release	1	<u>oppay</u>	1	probobly	1
<u>relef</u>	1	<u>oucipy</u>	1	probubly	1
releif	11	<u>outyourself</u>	1	probulay	1
releife	1	20	38	probuly	2
releive	2			propably	2
relieath	1			<u>proped</u>	1
reliefe	2			propily	1
relife	3			propiply	1
<u>religh</u>	1			proply	2
14	38			propublie	1
				<u>provably</u>	1
			28		59





					97.
<u>foregein</u>	1	reponiable	1	beginning	1
foregeon	1	reponsibility	1	begining	1
foregion	1	repsonble	1	beginning	1
foregin	3	resoni ble	1	beggining	1
foregn	1	<u>respencible</u>	1	<u>begining</u>	1
foreigen	2	respiculary	1	beging	1
<u>forein</u>	1	responable	4	begining	50
<u>foren</u>	1	responcable	3	beginning	1
forgein	1	<u>responcbl</u>	1	<u>begning</u>	1
forgien	4	<u>responce</u>	1	<u>beginning</u>	1
<u>forgn</u>	1	<u>responceable</u>	1	beiging	1
foriegn	18	<u>responcebille</u>	1	bigining	1
<u>foriegon</u>	1	responciab le	1	<u>legine</u>	1
forien	2	responcible	10	13	62
<u>forigen</u>	3	respondsible	1		
forigien	1	<u>responebal</u>	1		
forign	8	responiable	1		
<u>forigne</u>	1	responible	3		
<u>froien</u>	1	responilibly	1		
19	52	responisble	1		
expeince	1	responisble	1		
expencc	75	responsable	6		
<u>expention</u>	1	<u>responsble</u>	1		
<u>expince</u>	1	responseable	3		
expense	2	responsiable	4		
exspence	2	responsibal	2		
extence	1	<u>responsibale</u>	1		
<u>exposa ble</u>	1	responsibile	2		
8	84	<u>responsitable</u>	1		
		29	57		



accpalachian	1	<u>appoliation</u>	1	defficulty	1
acplcaion	1	<u>appolicipation</u>	1	deficuly	1
aflakation	1	atmation	1	difacolity	1
alicatne	1	atmocation	1	difaculity	1
<u>alyoukalt</u>	1	<u>opplcation</u>	2	difaculty	2
aplacation	5	34	96	diclaulity	1
apliacation	1			<u>dicullcult</u>	1
aplication	13			difcoluit	1
appacation	1			difculity	3
appacition	1			<u>diffacluty</u>	1
<u>appaclation</u>	1			diffaculty	5
appaction	1			diffavltly	1
appalacation	2			difffualty	1
appalaction	1			difffulty	5
appalalation	1			<u>difffuty</u>	1
appalation	1			difffeculty	1
<u>appelachion</u>	1			<u>difffelty</u>	1
<u>applacans</u>	1			differculity	1
applacation	39			diffficuility	1
applachian	1			diffficulaty	1
<u>applachion</u>	1			diffficulity	9
applackian	1			diffficultily	1
applaction	7			diffficutiy	1
applasion	1			diffficuty	1
applation	1			difffucaltured	1
applcation	1			difffucility	1
applecation	1			difffuclity	2
applician	1			difffuclty	3
applycation	1			<u>difffuctlal</u>	1





diffuculity	1	scean	8	<u>fanily</u>	1
diffuculty	3	sceen	2	feinally	1
diffuouty	1	sceign	1	fialy	1
diffulcity	1	sceine	1	fianaly	1
diffulculity	1	<u>sceme</u>	1	<u>fianly</u>	1
<u>diffulity</u>	1	science	2	<u>finaly</u>	1
diffultly	1	sciene	1	<u>final</u>	1
dificulity	1	scyne	1	finalie	1
dificultie	1	sean	2	finaly	39
dificulty	8	secen	2	findly	1
difucality	1	secene	1	<u>finealy</u>	1
difucilty	2	seen	4	finely	12
<u>difucultie</u>	1	seign	1	finially	5
<u>difuculty</u>	10	sein	2	finialy	7
43	84	seine	3	finily	5
		<u>seion</u>	1	fininity	1
		<u>sence</u>	1	finly	1
		sene	2	finnally	2
		seun	1	finnaly	2
		<u>siean</u>	1	<u>finoly</u>	1
		sien	1	20	85
		sience	1		
		<u>sign</u>	1		
	23		41		



defelup	1
defeoped	1
<u>defloped</u>	1
delevelop	1
delvelop	1
delvop	1
<u>devalep</u>	1
<u>devalope</u>	1
<u>devealped</u>	1
<u>develated</u>	1
develet	1
develip	1
devellop	1
devellope	2
develope	38
developled	1
develp	1
deverlp	1
<u>de revlepet</u>	1
devlop	1
devlope	2
devolape	2
devolepe	7
devolip	8
developed	7
devolp	1
devolpe	2
devoluped	2
devopped	1



acederation	1	<u>sercupstance</u>	1	<u>eshiey</u>	1
<u>cercanstance</u>	1	sermastance	1	essue	7
cercomstance	4	sermstand	1	esu	2
cerconstance	1	<u>sinstah</u>	1	esuce	2
cercumstace	1	sircumstance	4	esue	9
cereumstance	1	surcemstance	2	iesu	1
<u>cernstance</u>	1	surcomstance	3	<u>insue</u>	1
circanstance	1	surcunstance	1	ischoe	1
circomstance	7	<u>surcusant</u>	1	ishew	1
<u>circomts</u>	1	39	64	ishue	2
circumstant	2			issure	2
circunstance	5			issus	1
circunstanse	1			<u>issuyed</u>	1
circustance	2			istem	1
cirumstance	1			isu	1
corstance	1			issue	13
curcomstance	1			<u>usure</u>	1
curconstants	1			17	47
curcumstance	3				
curcustance	1				
curstance	2				
curstance	2				
scercumstance	1				
scirmsstance	1				
<u>secerstant</u>	1				
secumstance	1				
sercanstamp	1				
sercumstance	1				





atirial	1	sggust	1	cenant	1
mataials	1	subjection	1	<u>cendial</u>	1
<u>matail</u>	1	sugest	5	cenent	1
mateal	1	suggess	1	cennat	1
materal	5	suggest	6	centent	1
materiel	2	<u>suggus</u>	1	sccenate	1
matieral	2	sugjust	1	scenate	1
matirial	1	( <u>suggest</u> )	2	scenite	1
matral	1	(suggest(ed))		scentie	1
<u>matrial</u>	2	<u>suguset</u>	1	<u>seanate</u>	1
matriel	2	suject	2	senant	2
<u>meartal</u>	1	sujest	5	senat	1
<u>meaturial</u>	1	sujjest	1	senent	4
<u>merital</u>	1	<u>sujured</u>	1	senet	2
mertial	2	<u>sujust</u>	2	senete	2
metaral	1	14	30	seniate	1
metarial	1	mare	1	seninet	1
metarril	1	meair	1	senint	1
<u>meteral</u>	1	mear	36	senit	5
meterial	8	meer	8	senitate	1
metiral	1	meir	3	senite	4
metreal	1	meire	1	sennat	1
metrial	2	mier	4	sennate	5
militarly	1	miere	1	<u>sennent</u>	1
<u>mitural</u>	1	mire	3	sennet	2
26	43	near	11	<u>sentant</u>	1
		nere	1	<u>sentate</u>	1
		11	70	<u>sentent</u>	1



sentice	1	receptfully	1	respectibly	2
<u>sentor</u>	1	reoepectuly	1	respectifully	7
30	48	recploelt	1	respectifuly	5
		<u>resept</u>	1	respectily	1
<u>receve</u>	2	respecableley	1	respectivally	1
recieve	49	respecforly	1	respectivaly	3
recive	7	respectfully	3	respectively	1
<u>reice</u>	1	respectfuly	2	respectively	4
<u>rescieve</u>	1	respecitaly	1	respectivily	2
<u>reseave</u>	1	respecivaly	1	respectivly	1
6	61	<u>respeckably</u>	1	respectlutly	1
		respeckfully	2	respectly	3
		respeckly	2	respectufally	1
		respecralty	1	<u>respefully</u>	1
		respectably	3	<u>respetably</u>	1
		respectable	1	<u>respley</u>	1
		respectablity	1	responfully	1
		respectaby	1	<u>resspectifuly</u>	1
		respectally	1	46	81
		respectaly	2		
		respectavely	1		
		respectavily	1		
		respectavly	2		
		respectefully	2		
		respectfully	7		
		<u>respectiale</u>	1		
		respectially	1		
		respectible	1		





acreement	1	unfortunate	4	unfortuneate	1
<u>aggreament</u>	1	<u>unfortant</u>	1	unfortunenate	1
aggreement	3	unforanate	1	unfortunite	1
aggrement	8	unforate	1	<u>unfortunt</u>	1
aggrenent	1	unforcinate	1	unforuate	1
agreeablment	1	unforiant	1	unfortunate	6
agreement	4	<u>unforlant</u>	1	<u>unfurnate</u>	1
agreemeant	1	unfornanet	1	35	75
agrement	15	unfornate	6		
agrment	1	unfornatunate	1		
<u>agurment</u>	1	unfornature	3		
11	37	<u>unforntion</u>	1		
		unfornuate	2		
		unfornuit	1		
		unfortament	1		
		unfortant	5		
		unfortante	2		
		unfortinant	1		
		unfortunate	8		
		unfortionant	1		
		unfortionate	4		
		unfortit	1		
		<u>unfortment</u>	1		
		unfortnate	6		
		unfortuante	1		
		unfortument	1		
		unfortunant	4		
		unfortune	2		



<u>magarite</u>	1	alabrate	1	<u>elarbrate</u>	1
magarity	1	delaberate	1	elbrate	1
magarty	1	delaborate	3	elebarate	1
mageraty	1	delaboris	1	elebariot	1
magiorty	1	delaborite	1	eleborate	3
<u>magority</u>	1	<u>delaverit</u>	1	elebrate	5
majaraty	1	<u>earbort</u>	1	elebraty	1
majarity	9	elabalit	1	elebret	1
majarty	1	<u>elabat</u>	1	elerbarded	1
majirty	1	<u>elabate</u>	1	<u>elevarent</u>	1
majoraty	1	elaberad	1	eleverate	1
majoriety	1	elaberate	13	elevevate	1
majorite	1	elabirate	1	elevort	1
majorrity	1	<u>elablent</u>	1	eliberate	1
majorty	4	elaborade	1	<u>elibertate</u>	1
<u>margety</u>	1	elaboret	1	elibrate	1
<u>marigty</u>	2	elaborit	2	ellaberate	1
marjarity	1	elaborite	7	ellaborate	1
<u>mazoraty</u>	1	elabort	2	ellavbort	1
<u>menyhote</u>	1	elaborte	3	elliberate	1
<u>merjority</u>	1	elabrate	12	elobrate	2
mojarty	1	elabret	1	<u>irrlavite</u>	1
morjaraty	1	elabriot	1	50	93
<u>morjorty</u>	1	elabroate	1		
<u>muchjarty</u>	1	elalorate	2		
25	37	<u>elaradate</u>	1		
		<u>elarate</u>	1		
		<u>elarbores</u>	1		



<u>cissitante</u>	1	<u>mecary</u>	1	nesseary	1
citen	1	necassary	2	nessecary	2
citisen	1	<u>necassity</u>	1	nesseccary	1
<u>citisene</u>	1	mesecerty	1	nessecery	1
<u>citison</u>	1	<u>messecary</u>	1	nesserey	1
<u>citizan</u>	1	ncesseary	1	nesserty	1
citizence	1	necasary	1	nessery	2
<u>citizent</u>	2	necassary	1	nessesary	3
citizon	1	neccesary	4	nessessary	1
<u>citozon</u>	1	neccessary	13	nessiary	1
cityzen	1	neccessatry	1	nessicery	1
cizen	1	neccisary	1	nessisary	1
<u>cizeni</u>	1	necessarily	1	nessissary	1
<u>sicoin</u>	1	necessatory	1	<u>nissiary</u>	1
sisident	1	necessiary	2	43	69
<u>sition</u>	1	necessitary	1		
<u>sitizen</u>	1	necessry	1	<u>diavice</u>	1
sticon	1	necissary	1	devide	22
18	19	neccsary	3	devine	1
		nectorsy	1	<u>devolt</u>	1
		nesceriaty	1	divid	1
		neseccary	1	<u>divied</u>	3
		<u>nesestay</u>	1	6	29
		nessacary	1		
		<u>nessarity</u>	2		
		<u>nessarty</u>	1		
		nessary	2		
		nesscary	2		
		nesscery	1		





acceaves	1	accoire	1	alamac	2
accheives	1	acquire	8	<u>alamack</u>	1
<u>accheves</u>	1	accure	1	alamalic	1
<u>acchief</u>	1	accuire	1	alamanac	1
acchieves	4	achior	1	alambac	1
accieves	2	achoir	1	alamica	1
accives	1	achoire	2	alamnac	1
acheas	1	achorir	1	allmack	1
acheaves	1	<u>aciour</u>	1	almace	1
acheives	12	ackwire	1	almach	2
acheves	2	acoir	1	almacnic	1
acheze	1	acquior	1	almanace	1
achief	3	acquir	2	almanach	1
achievs	2	<u>alquire</u>	1	almanack	8
achives	15	acquire	4	almanact	3
<u>achivite</u>	1	aquior	3	almanaic	1
16	49	acquire	58	almanak	2
		<u>acquiror</u>	1	almanaque	1
		<u>atchoir</u>	1	almanc	1
		<u>ecquere</u>	1	almance	1
		20	91	almanacte	1
				almantic	1
				almatach	1
				alminac	4
				alminake	1
				almon	1
				almonac	5
				<u>almonace</u>	1



almonach	1	aunomack	1	accient	4
almonack	1	automac	1	accinate	1
almonact	2	olminach	1	aceant	1
almonak	1	omanace	1	achaint	1
almond-ack	1	omanach	1	achange	1
almnac	1	<u>omlact</u>	1	<u>achant</u>	1
almunac	1	omonack	1	achiant	1
alnmack	1	onancate	1	<u>achiech</u>	1
<u>alnountach</u>	1	<u>ornoct</u>	1	achient	6
<u>alomack</u>	1	64	94	aciant	2
<u>alomale</u>	1			acient	1
alumac	1			acinant	1
alumack	1			ancient	1
alumnac	1			anceint	2
amack	8			anceinte	1
amanauck	1			anchain	1
amanazue	1			anchant	4
aminact	1			anchiant	2
amonac	2			anchient	9
amonack	2			<u>anchinent</u>	1
amulilace	1			anciant	1
amunac	1			ancience	1
aulmac	1			anciont	1
aumanac	1			anicent	2
aumanact	1			<u>anichant</u>	1
aumanlac	1			anichen	1
aumonac	2			<u>anshant</u>	1
				27	50





apeace	15	appoches	2	antory	1
apeice	16	<u>apporation</u>	1	aterney	3
apiace	1	apporoche	1	aternig	1
apice	2	appracant	1	atirney	1
apieace	1	approaces	2	atornay	1
appeace	1	approaes	1	atorney	4
appeice	7	approahes	1	atorny	4
appice	2	approcahes	1	<u>atrent</u>	1
8	45	approces	2	<u>atruneial</u>	1
		approchas	3	<u>atterany</u>	1
		approches	57	attermeat	1
		approchs	1	atterminative	1
		approchus	1	atterminy	1
		approchros	1	atternay	3
		approckes	1	atterney	8
		approcks	1	atterny	13
		<u>approhes</u>	1	attonary	1
		approlcles	1	attonery	2
		apreches	1	attonry	1
		aproaches	2	attornay	1
		approachs	1	attorny	12
		aproce	2	attourney	1
		aproches	8	attrony	1
		<u>aprochies</u>	1	attorney	8
		aproses	1	<u>atturnity</u>	1
		aprouches	1	<u>atturny</u>	1
		<u>oppores</u>	1	<u>aturany</u>	1
		27	97	<u>aturnery</u>	1



aturnety	1	beoquatt	1	bouuke	1
aturney	5	<u>beugue</u>	1	buoque	1
aturnie	1	bocade	2	locade	1
aturning	1	<u>bocafuet</u>	1	loquet	1
aturnity	2	bocay	4	vocade	1
aturny	1	bocaye	1	<u>vocase</u>	1
<u>entarney</u>	1	<u>bockey</u>	1	34	123
<u>eturney</u>	1	<u>bodkatl</u>	1		
36	89	boquay	2		
		<u>bohawe</u>	1		
		<u>bokay</u>	2		
		<u>bonquek</u>	1		
		bonquet	2		
		boqet	1		
		boquat	1		
		boque	9		
		<u>boqueat</u>	1		
		boquet	71		
		boquett	1		
		boquey	5		
		boquie	1		
		boueque	1		
		bouqet	1		
		bouqua	1		
		bouguet	1		
		bouquey	1		
		bouquite	1		
		bouqwet	1		



ackulation	1	cazidation	1	carmony	2
<u>actuallocation</u>	1	coculation	1	<u>carrmony</u>	1
cacuction	1	colcurtlation	1	<u>cearamony</u>	1
caculation	3	coulation	1	cearmony	1
cakulation	1	culation	2	<u>celmenter</u>	1
<u>calachion</u>	1	<u>quaklions</u>	1	ceramon	1
<u>calacio</u>	1	34	65	ceramoney	2
calcalation	1			ceramony	17
calcation	1			<u>cerconry</u>	1
calculation	1			ceremiony	1
<u>calcoation</u>	1			<u>ceremoney</u>	1
calcuation	8			ceremoy	1
calcution	2			cerimony	6
calision	1			cermeny	1
calition	1			cermoney	4
calkulation	1			cermoniey	1
callucation	1			cermonity	1
calqlation	1			cermony	19
calquation	4			ceromany	2
calquetation	1			ceromeny	1
calqulation	5			ceromoney	3
calucation	5			ceromonie	1
<u>calulaion</u>	1			ceromony	11
calulatation	1			ceromy	1
calulation	9			ceronany	1
caluquation	1			<u>cramy</u>	1
calutation	2			sairamony	2
capulation	1			sairmony	1





saramony	2	<u>comceled</u>	1	decelious	1
sarimony	1	conceald	2	decillious	1
sarmony	1	conceilled	1	declious	1
<u>secermony</u>	1	<u>conceilded</u>	1	delious	1
seramony	3	conceilled	11	delatious	1
seremoney	1	conceled	9	delcious	1
seremony	2	<u>concelied</u>	1	delecious	2
serimony	2	concieled	8	deleious	1
seromany	1	conciled	1	<u>deleshes</u>	1
seromony	3	conclead	1	delicas	1
<u>serrneny</u>	1	consceled	2	deliciace	1
serronany	1	conscieler	1	deliciate	1
serymony	1	<u>conseald</u>	1	deliceous	1
<u>severmony</u>	1	consealed	24	delicous	14
42	107	conseceled	1	delicus	3
		conseied	1	delious	13
		conseled	1	delirous	1
		consield	1	delises	1
		consielied	1	deliseous	1
		consiled	2	delished	1
		<u>conzeled</u>	1	delishes	3
		<u>cosealed</u>	2	delishious	5
	23		74	delishish	1
				delishous	2
				delishuse	1
				delisious	4
				delisous	2
				<u>delissis</u>	1
				delitious	2



delivious	1	desapear	2	dissipear	3
<u>delures</u>	1	desappear	1	<u>disspear</u>	2
dilicious	1	desepere	1	30	111
<u>dilousios</u>	1	desipear	1		
33	73	dessepear	1	described	1
		dessepere	1	described	5
dropped	28	diappear	1	decribed	4
dropted	1	disapear	32	diccribe	1
<u>droption</u>	1	<u>disaper</u>	1	<u>discirbe</u>	1
<u>drouped</u>	1	disapere	3	discrib	4
4	31	disappeare	1	discribe	34
		disapper	1	<u>disoube</u>	1
		diseppear	4	disquiried	2
		disepere	1	<u>distribe</u>	1
		disipear	7	10	54
		disipeir	1		
		disipere	1		
		<u>disipre</u>	1		
		dispear	3		
		<u>dispeare</u>	1		
		dispere	2		
		<u>dissapar</u>	1		
		dissapear	29		
		<u>dissaped</u>	1		
		dissapeer	1		
		dissapier	1		
		dissappear	5		
		dissepare	1		





agent	1	ellegant	2	emeper	2
alegant	2	elligant	4	<u>emereler</u>	1
aligant	1	elligent	5	<u>emernor</u>	1
allegant	1	<u>ellgant</u>	1	<u>empar</u>	1
alligent	2	iloquent	1	<u>empear</u>	1
<u>ealgant</u>	1	iligant	1	empeor	1
<u>egenlangent</u>	1	<u>illigent</u>	1	empeore	1
eglegant	1	35	93	<u>empeorrior</u>	1
elagant	5			emper	2
elagent	5			emperer	3
eleaget	1			emperor	11
eleagant	1			emperoir	2
elecant	1			emperoner	1
elegante	1			emperoor	1
elegate	1			emperorer	1
elegeant	7			emperr	1
elegant	18			<u>emperrer</u>	1
eleghant	1			emperror	6
elegiant	1			<u>emperry</u>	1
eleguent	1			empieror	1
elgant	2			empireor	1
<u>elgent</u>	1			<u>empireror</u>	1
<u>elgrant</u>	1			empiror	4
elient	1			empor	5
eligant	8			empore	1
eligent	4			emporer	21
ellagant	1			emporor	6
ellegant	7			emporrer	1



enpire	1	eccelent	1	expalent	1
eperor	1	ecellant	1	exptonent	1
erempor	1	<u>elecenent</u>	1	exulent	1
imperial	1	elecent	1		
imperor	2	escelent	1	31	99
33	86	exalent	2	gratefull	2
		exalont	1	gratefull	1
		excalent	1	gratful	2
		excelant	11	greatful	40
		excelent	30	greatfull	2
		exceliant	1	greatiful	1
		excellant	21	6	48
		<u>excilant</u>	1		
		excilent	4		
		excillent	1		
		exclant	1		
		excellent	1		
		excolent	1		
		execelent	1		
		execlent	1		
		<u>exelant</u>	2		
		exelent	5		
		exillent	1		
		exiloent	1		
		exlant	1		
		exlante	1		
		<u>exleant</u>	1		
		exlent	1		



air	12	corse	2	iccicle	2
aire	2	hoarce	12	iccle	1
are	2	hoars	4	iceal	1
arie	2	horac	1	<u>icecakol</u>	1
arr	1	horace	3	iceccle	1
aye	1	horas	1	icecele	1
ayr	1	horce	4	icecelley	1
<u>ear</u>	1	horcus	1	icecial	1
earor	1	horice	1	icecical	1
eir	2	horise	2	<u>icecickel</u>	1
ere	4	horose	1	icecickle	5
eror	2	horrois	1	icecicle	25
err	12	<u>hors</u>	1	<u>iceciefer</u>	1
<u>erro</u>	1	horse	9	icecihle	1
hair	2	<u>horses</u>	1	<u>icecilcle</u>	1
hier	1	hource	1	icecile	3
<u>ire</u>	1	<u>hourse</u>	10	iceciycle	2
17	48	17	55	<u>iceckle</u>	1
				icecle	1
				icecliess	1
				icecycle	14
				iceicle	2
				icekile	1
				<u>icekle</u>	1
				<u>icesel</u>	1
				icesical	1
				icesiccle	1
				icesickle	4





icesicle	3	egarence	1	igornace	3
icesile	2	<u>egenerence</u>	1	igornance	3
icical	3	<u>egerance</u>	1	<u>igorents</u>	1
icicele	1	egerince	1	<u>igornnce</u>	1
icichle	1	eggorence	1	ingorance	1
iciciccle	1	egmenance	1	ingoranse	2
icicikle	1	egnerance	2	ingorence	1
icicile	1	egnorance	5	ingornents	1
icickel	1	egnorence	1	ingornice	1
icicyle	2	egneurence	1	<u>ingrance</u>	1
icillial	1	egorents	1	<u>inironts</u>	1
icle	1	eignortas	1	innorence	1
iclic	1	eigorance	1	inorance	1
icycile	1	<u>engernece</u>	1	<u>irganants</u>	1
icycle	15	engorance	1	irgonence	1
<u>iscycle</u>	<u>1</u>	<u>engrentac</u>	<u>1</u>	<u>irrigence</u>	<u>1</u>
44	113	icnorence	1	44	64
		igerence	1		
		<u>ignance</u>	1		
		ignerence	1		
		ignorants	3		
		ignornace	1		
		ignornance	1		
		ignorence	9		
		ignornce	1		
		igorance	1		
		ignorannce	1		
		igorence	1		



enterfear	4	<u>mishion</u>	1	musucan	1
enterfere	2	<u>mqucians</u>	1	<u>muzetion</u>	1
infear	1	<u>mshion</u>	1	30	67
<u>inferred</u>	1	mucian	4		
<u>inferor</u>	2	mucician	2		
intefear	1	mucigian	1		
intefere	1	mucision	4		
inteferior	1	mucissian	1		
interfear	55	mucisum	1		
<u>interfeare</u>	1	mugician	1		
<u>interfeir</u>	1	muisian	1		
interfer	16	muscian	1		
interfier	5	muscion	1		
interfiere	2	musesion	1		
interfire	2	museum	1		
interflor	1	musgimes	1		
<u>interfure</u>	1	<u>mushion</u>	1		
interifer	1	musiacl	1		
interrfear	1	musian	6		
interver	1	<u>musicain</u>	1		
intifere	1	musician	16		
<u>iterfear</u>	1	musication	1		
22	102	musiccan	1		
		musicicin	1		
		musiem	1		
		musion	4		
		musision	2		
		musition	7		





<u>merutal</u>	1	nutrol	2	pagions	1
<u>metral</u>	1	nutrual	1	pegrions	5
neutral	2	nutural	4	<u>peigen</u>	1
muteral	3	<u>nuturel</u>	1	peigions	1
mutral	3	32	132	peigons	6
mutrol	2			pidgens	1
neatral	1	<u>pachince</u>	1	pidgeons	1
neatrual	1	pacience	2	pidgons	1
neutral	1	pactiase	1	piegions	1
netrual	5	patiance	4	piegons	8
netruel	1	patence	1	<u>pieon</u>	1
netural	6	pateince	4	pigans	1
neutrel	1	<u>patienches</u>	1	pigeans	1
neutrial	2	patientence	1	pigelons	1
neutrual	1	patients	15	<u>pigenos</u>	1
newtral	3	pations	2	pigens	1
notrial	1	<u>piance</u>	1	pigiones	1
nuetral	2			pigions	30
<u>nuntile</u>	1	11	33	pigons	18
<u>nurated</u>	1			<u>pugon</u>	1
<u>nutaral</u>	1			<u>vigilons</u>	1
nuteral	13				
nuteraul	1			21	83
nuterial	1				
nutral	59				
<u>nutreal</u>	1				
nutrial	8				
nutril	1				



reance	1	herace	1	causy	1
<u>reaverence</u>	1	<u>rehars</u>	1	sacey	1
<u>reclaneds</u>	1	reharse	2	<u>sacuas</u>	1
<u>reference</u>	1	rehase	1	sacucy	1
reference	16	rehearce	4	sacusy	2
refference	1	rehears	2	sacusy	1
refurance	1	rehease	1	saicy	1
<u>revance</u>	1	reherce	4	salvice	1
reveance	1	reherse	33	sasay	1
<u>revence</u>	1	rehersh	1	sassy	2
reverance	50	<u>rehoress</u>	1	sasucy	1
reveranse	2	rehourse	2	sasy	1
reverents	1	<u>rehurce</u>	1	saucy	1
<u>reversence</u>	1	<u>rehurs</u>	1	sauce	4
14	79	rehurse	17	saucey	9
		reseres	1	<u>saucsy</u>	1
		reshese	1	<u>saugace</u>	1
		<u>reshouse</u>	1	saucy	1
		reslerse	1	<u>sause</u>	1
		resurse	1	sausey	2
		<u>resurze</u>	1	sausy	1
		reverse	4	sausy	10
		reverse	7	sawsey	1
		<u>revourse</u>	1	scaucy	2
		24	90	schousy	1
				scucy	1
				<u>senlated</u>	1
				<u>shosige</u>	1



<u>soccey</u>	1	ceage	2	<u>veatggbles</u>	1
soccing	1	sceage	1	vedgeble	1
socer	1	sceige	1	vegable	2
<u>socie</u>	1	scheage	1	vegatable	33
socosy	1	sciege	3	<u>vegatable</u>	1
socy	1	<u>seag</u>	1	vegatable	1
<u>sosy</u>	1	seage	21	vegeable	1
soucy	1	seague	2	vegestable	2
suacy	1	<u>seagze</u>	1	vegetiable	1
succay	1	sedge	1	vegiativle	1
<u>succoss</u>	1	sege	2	vegitable	8
susey	1	segiours	1	vegitobe	1
<u>sussy</u>	1	seicege	1	<u>vegtabal</u>	1
<u>susucy</u>	1	seidge	1	vegtabale	1
42	66	seig	1	vegetable	7
		<u>seigce</u>	1	vegtiable	2
		seige	83	vetagable	1
		seigue	1	<u>vigtiable</u>	1
		seized	5	<u>vilable</u>	1
		siage	1	<u>vegatable</u>	1
		sieage	1	20	68
		<u>sige</u>	1		
		22	133		





### Test III

#### Directions

Write your name at the top of the page.

The purpose of this test is to determine how well you can spell by sound.

I will pronounce fifty-four words that you have never heard. Spell them the way you think is correct from the sound.

Listen attentively and spell carefully. Do not hurry. You are not being timed.

I will pronounce each word twice. When I pronounce it the first time listen carefully, watching the movements of my lips, but do not write. After the word has been pronounced the second time spell it the way it sounds.



## TO BE SPELLED BY SOUND

- |               |                 |
|---------------|-----------------|
| 1. carling    | 26. behen       |
| 2. gelanthum  | 27. adipic      |
| 3. carob      | 28. fodient     |
| 4. fustanella | 29. bursa       |
| 5. loquat     | 30. incrassate  |
| 6. ranula     | 31. cissoid     |
| 7. viator     | 32. parvis      |
| 8. granza     | 33. quis-qualis |
| 9. pentad     | 34. shikra      |
| 10. acnode    | 35. vulpinism   |
| 11. grison    | 36. zythum      |
| 12. fittonia  | 37. tragopan    |
| 13. iridol    | 38. caftan      |
| 14. zumatic   | 39. lekane      |
| 15. thorium   | 40. alerce      |
| 16. jactant   | 41. quoin       |
| 17. tappoon   | 42. romal       |
| 18. mahout    | 43. aomite      |
| 19. harmost   | 44. laic        |
| 20. dualin    | 45. tampon      |
| 21. hilsa     | 46. lithoid     |
| 22. intine    | 47. gelanthum   |
| 23. ramtil    | 48. custrel     |
| 24. alalite   | 49. holmia      |
| 25. marver    | 50. maleo       |





## Test IV

## Directions

Write your name at the top of the page.

The purpose of this test is to determine how rapidly and accurately you can observe words. There are fifty words written in black ink on this chart. As the roller on which they are placed turns they will appear for a moment in the opening in the center of the chart. Watch that space closely and observe each word that passes. As soon as a word passes write it, or as much of it as you have seen. After you have seen one word I will count slowly to ten before I show another word, so you will have plenty of time to write.

Remember, when you have written a word watch the screen so that you will not miss seeing the next word. Each word will be shown only once.



## Column T

<u>4 letters</u>	<u>5 letters</u>	<u>6 letters</u>	<u>7 letters</u>	<u>8 letters</u>
hymn 27	guess 13	volume 43	concern 57	circular 49
	refer 53	summon 55	various 51	argument 43
	ought 35	victim 71	entitle 60	organize 30
	folks 8	accept 21	absence 57	official 71
	aches 80	decide 50	bruised 76	estimate 52
	choir 58	recent 43	burglar 121	accident 28
	error 20	minute 31	chimney 39	national 22
	medal 27	really 60	compete 64	business 76
	reign 53	banana 60	deceive 74	approval 89
		lilies 59	genuine 46	biscuits 69
		liquor 75	handful 43	commence 43
		ninety 68	realize 58	favorite 39
		severe 43	scenery 65	medicine 61
		sneeze 57	slipped 61	straight 27
		wreath 49	stomach 63	telegram 52
			succeed 68	
			wrestle 47	



<u>9 letters</u>		<u>10 letters</u>		<u>11 letters</u>		<u>13 letters</u>	
associate	85	invitation	72	celebration	45	investigation	75
political	53	impossible	60	discoveries	29		
Wednesday	34	automobile	40	electricity	77		
amusement	74	conference	38				
whistling	78	changeable	96				
wholesome	110	exceptions	53				
		stationary	57				





## Column U

<u>4 letters</u>	<u>5 letters</u>	<u>6 letters</u>	<u>7 letters</u>	<u>8 letters</u>
mere 70	meant 51	assure 26	whether 83	earliest 49
heir 48	scene 41	relief 38	foreign 52	colonies 20
veil 68	issue 47	occupy 38	expense 84	probably 59
	saucy 66	senate 48	finally 85	material 43
	siege 133	divide 29	develop 90	majority 37
		apiece 45	suggest 30	achieves 49
		hoarse 55	receive 61	attorney 89
		icicle 113	citizen 19	ceremony 107
		wretch 82	acquire 91	grateful 48
			almanac 94	musician 67
			ancient 50	patience 33
			bouquet 123	rehearse 90
			dropped 31	
			elegant 93	
			emperor 86	
			neutral 132	
			pigeons 83	



## Column U Continued

<u>9 letters</u>	<u>10 letters</u>	<u>11 letters</u>	<u>12 letters</u>
beginning 62	difficulty 84	distinguish 53	circumstance 64
agreement 37	approaches 97	responsible 57	respectfully 81
elaborate 93		application 96	
necessary 69		calculation 65	
concealed 74		unfortunate 75	
delicious 73			
described 54			
disappear 111			
excellent 99			<u>13 letters</u>
ignorance 64			consideration 42
interfere 102			
reverence 79			
vegetable 68			





## Column T

<u>Monosyllables</u>		<u>Dissyllables</u>		<u>Polysyllables</u>		<u>Polysyllables</u>	
guess	13	biscuits	69	circular	49	medicine	61
ought	35	burglar	121	argument	43	realize	58
folks	8	chimney	39	organize	30	scenery	65
aches	80	commence	43	official	71	stationary	57
bruised	76	compete	64	estimate	52	<u>telegram</u>	52
choir	58	deceive	74	accident	28	32	1790
hymn	27	error	20	invitation	72		
reign	53	handful	43	impossible	60		
slipped	61	lilies	59	associate	85		
sneeze	57	liquor	75	automobile	40		
wreath	49	medal	27	various	51		
<u>straight</u>	27	ninety	68	entitle	60		
12	544	severe	43	political	53		
		stomach	63	national	22		
<u>Dissyllables</u>		succeed	68	conference	38		
volume	43	whistling	78	really	60		
summon	55	wholesome	110	celebration	45		
victim	71	<u>wrestle</u>	47	amusement	74		
accept	21	30	1702	approval	89		
concern	57			banana	60		
decide	50			changeable	96		
recent	43			discoveries	29		
business	76			electricity	77		
refer	53			exceptions	53		
minute	31			favorite	39		
absence	57			genuine	46		
Wednesday	34			investigation	75		



## Column U

<u>Monosyllables</u>		<u>Dissyllables</u>		<u>Polysyllables</u>		<u>Polysyllables</u>	
meant	51	bouquet	23	earliest	49	disappear	111
scene	41	concealed	74	distinguish	53	elegant	93
mere	70	described	54	consideration	42	emperor	86
dropped	31	grateful	48	colonies	20	excellent	99
heir	48	neutral	32	occupy	38	icicle	113
hoarse	55	patience	33	probably	59	ignorance	64
siege	133	pigeons	83	responsible	57	interfere	102
veil	68	rehearse	90	beginning	62	musician	67
wretch	82	saucy	66	application	96	reverence	79
9	579	23	1510	difficulty	84	<u>vegetable</u>	68

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Dissyllables

whether	83
assure	26
relief	38
foreign	52
expense	84
issue	47
suggest	30
senate	48
receive	61
divide	29
achieves	49
acquire	91
ancient	50
apiece	45

finally	85
develop	90
circumstance	64
material	43
respectfully	81
agreement	37
unfortunate	75
majority	37
elaborate	93
citizen	19
necessary	69
almanac	94
approaches	97
attorney	89
calculation	65
ceremony	107
delicious	73



thale	1	ratech	1
theial	1	reach	12
vaale	1	reache	1
vail	44	<u>reached</u>	1
vaile	3	reacieh	1
<u>value</u>	1	rece	1
<u>vance</u>	1	rech	10
<u>veail</u>	1	recht	1
veal	1	<u>reck</u>	1
veile	3	redge	2
vial	1	reich	1
<u>viel</u>	10	rench	1
12	68	retch	8
		retched	2
		<u>right</u>	1
		urrech	1
		wreach	5
		wreatch	2
		wrech	19
		wrectch	2
		wrecth	3
		wrench	5
		<u>wrentched</u>	1
	23		82



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